Proceedings of the
American Association of Textile Chemists and Colorists

Copyright, 1956, American Association of Textile Chemists and Colorists

SEPTEMBER 10, 1956

National Officers of the Association

President ..... RAYMOND W JACOBY, Ciba Co, Inc, 627 Greenwich St, New York 14, N Y
Vice President (Central Atlantic Region) ... FREDERICK V TRAUT, Globe Dye Works Co, 4500 Worth St, Philadelphia 24, Pa
Vice President (Western Region) ... JOSEPH H JONES, Phoenix Dye Works, 1963 Southport Ave, Chicago 14, Ill
Vice President (New England Region) ... ERNEST R KASWELL, Fabric Research Laboratories, Inc, 1000 Providence Highway, Dedham, Mass
Vice President (Southern Region) .... WALTER M SCOTT, U S Dept of Agriculture, Washington 25, D C
Executive Secretary and Assistant Treasurer .... GEORGE P PAINE, Lowell Technological Institute, Lowell, Mass
Assistant Secretary ..... RICHARD R FREY, Lowell Technological Institute, Lowell, Mass
Treasurer ..... ALBERT E SAMPSON, National Aniline Division, Allied Chemical & Dye Corp, 150 Causeway St, Boston 14, Mass
Treasurer Emeritus ..... WILLIAM R MOORHOUSE, P O Box 352, South Yarmouth, Mass
Founder ..... LOUIS A OLNEY (Deceased)
Chairman of the Executive Committee on Research ... CHARLES W DORN, Consultant, Suite 1300, 369 Lexington Ave, New York 17, N Y
Director of Research .. HAROLD W STIEGLER, Lowell Technological Institute, Lowell, Mass

Standing Committees of the Council

Technical Committee on Research ..... C A SYLVESTER, *Chairman*
Publicity ..... JAMES A DOYLE, *Chairman*
Conventions ..... GEORGE O LINBERG, *Chairman*
Appropriations ..... ALBERT E SAMPSON, *Chairman*
Constitution and Bylaws ..... HAROLD C CHAPIN, *Chairman*
Membership and Local Sections ... JOSEPH H JONES, *Chairman*
Corporate Membership ..... ALBERT E JOHNSON, *Chairman*
Publications ..... WALTER M SCOTT, *Chairman*
Technical Program ..... WALTER M SCOTT, *Chairman*
Technical Supplies ..... HAROLD C CHAPIN, *Chairman*

Councilors

Representing Sections

NEW ENGLAND REGION

Northern New England: JOHN P PLOUBIDES, FRANK J RIZZO, ROBERT D ROBINSON
Rhode Island: FRANCIS H CASEY, ERNEST J CHORNYEI, EDWARD H GAMBLE, RAYMOND B TAYLORSON
Western New England: RAYMOND J CAREY, RUDOLPH C GEERING

CENTRAL ATLANTIC REGION

Hudson Mohawk: IRWIN J SMITH
New York: ROBERT C ALLISON, MATTHEW J BABEY, WILLIAM F BROMMELSIEK, PERCY J FYNN, JOHN H HENNESSEY, PAUL J LUCK, HARRY MOORE
Niagara Frontier: BERNARD K EASTON
Philadelphia: ARTHUR W ETCHELLS, HARRY L MORGAN, RICHARD A SHIMP, CLARENCE A SEIBERT, JACKSON A WOODRUFF

SOUTHERN REGION

Piedmont: A HENRY GAEDE, HARLEY Y JENNINGS, HERMAN J JORDAN, JR, M M McCANN, HENRY A RUTHERFORD
South Central: JOSEPH D MOSHEIM
Southeastern: S JACK DAVIS, ROBERT B HALLOWELL
Washington: LAWRENCE L HEFFNER

WESTERN REGION

Mid-West: ERIC W CAMP, L B MacFARLAND, J GORDON STOTT
Pacific Northwest: HUBERT A DESMARAIS
Pacific Southwest: SIDNEY SPRINGER

Past Presidents

ELVIN H KILLHEFFER, P J WOOD, WILLIAM H CADY, ALBAN EAVENSON, CARL Z DRAVES, THOMAS R SMITH, WILLIAM D APPEL, HENRY F HERRMANN, C NORRIS RABOLD, J ROBERT BONNAR

Student Chapters

ALABAMA POLYTECHNIC INSTITUTE, BRADFORD DURFEE TECHNICAL INSTITUTE, CLEMSON COLLEGE, FAIRLEIGH DICKINSON COLLEGE, GEORGIA INSTITUTE OF TECHNOLOGY, LOWELL TECHNOLOGICAL INSTITUTE, NEW BEDFORD INSTITUTE OF TEXTILES AND TECHNOLOGY, NORTH CAROLINA STATE COLLEGE, PHILADELPHIA TEXTILE INSTITUTE, RHODE ISLAND SCHOOL OF DESIGN, UTICA TECHNICAL INSTITUTE

Local Section Officers

New England Region

NORTHERN NEW ENGLAND

Chairman ..... JOHN M GOULD, Barre Wool Combing Co, Ltd, South Barre, Mass
Secretary ..... AZEL W MACK, Dexter Chemical Corp, 581 Boylston St, Boston 16, Mass
Vice Chairman—E B BELL *Treasurer*—W W PENNOCK

RHODE ISLAND

Chairman ..... REMUS F CAROSELLI, Owens-Corning Fiberglas Corp, Ashton, R I
Secretary ..... CHARLES F STOKES, Carbic-Moss Corp, 87 Weybosset St, Providence, R I
Vice Chairman—T LARSON *Treasurer*—J W TIMPERLEY

WESTERN NEW ENGLAND

Chairman ..... THOMAS J GILLICK, JR, American Felt Co, Glenville, Conn
Secretary ..... ANDREW W GOODWIN, Princeton Knitting Mills, Watertown, Conn
Vice Chairman—J E HIRN, SR, *Treasurer*—A H DE MARCO

Central Atlantic Region

HUDSON-MOHAWK

Chairman ..... ALBERT E HERRMANN, JR, General Aniline Works, Rensselaer, N Y
Secretary ..... MAURICE FISHMAN, Lee Dyeing & Finishing Co, Johnstown N Y
Vice Chairman—E A CHEVRETTE *Treasurer*—J W MERRILL

NEW YORK

Chairman ..... DONALD E MARNON, American Aniline Products, Inc, 50 Union Sq, New York 3, N Y
Secretary ..... RICHARD P MONSAERT, JR, Puritan Piece Dye Works, Inc, 550 E 38th St, Paterson, N J
Vice Chairman—J A KOMNINOS *Treasurer*—R E MILLER

NIAGARA FRONTIER

Chairman ..... JOHN WALLACE, Supersilk Hosiery Mills, 1151 Florence St, London, Ontario, Canada
Secretary ..... KENNETH A LISTER, Canadian Industries Ltd, 92 King St E, Hamilton, Ontario, Canada
Vice Chairman—W H LEYKING *Treasurer*—A M VIDITZ-WARD

PHILADELPHIA

Chairman ..... THOMAS H HART, Hart Products Corp, P O Box 5025, Philadelphia 11, Pa
Secretary ... ERNST W EMPTING, General Dyestuff Co, 123 S 2nd St, Philadelphia 6, Pa
Vice Chairman—E BURRELL *Treasurer*—D W ROBINSON

Southern Region

PIEDMONT

Chairman ...CLARENCE HOOPER, Burlington Industries, 427 S Broad St, Burlington, N C
Secretary ..... WARREN E RIXON, Carbide & Carbon Chemicals Co, 112 S Tryon St, Charlotte, N C
Vice Chairman—C O STEVENSON *Treasurer*—J C KING

SOUTH CENTRAL

Chairman ..... WILLIAM F LUTHER, 217 Mill Street, Cleveland, Tenn
Secretary ..... ERNEST V HELMS, Geigy Dyestuffs, Div Geigy Chemical Corp, 276 S Crest Rd, Chattanooga 4, Tenn
Vice Chairman—J C WHITT *Treasurer*—F E CATER

SOUTHEASTERN

Chairman ..JAMES W SWINEY, Fulton Bag & Cotton Mills, Atlanta, Ga
Secretary ... EDWARD R RAVENEL, Morton Salt Co, Decatur, Ga
Vice Chairman—W B GRIFFIN *Treasurer*—W E FAYSSOUX

WASHINGTON

Chairman ..GEORGE S BUCK, JR, National Cotton Council of America, 1832 M St, NW, Washington 6, D C
Secretary .... NELSON F GETCHELL, National Cotton Council of America, 1832 M St, NW, Washington 6, D C
Vice Chairman—G P FULTON *Treasurer*—L R MIZELL

Western Region

MID-WEST

Chairman ..... ARTHUR I HULTBERG, Bear Brand Hosiery Co, Kankakee, Ill
Secretary .... WARREN B BROADBENT, Geigy Dyestuffs, 629 W Washington Blvd, Chicago, Ill
Vice Chairman—S M LITTLEJOHN *Treasurer*—K M HARMS

PACIFIC NORTHWEST

Chairman ..ROBERT E NEWMAN, Jantzen Knitting Mills, Portland Ore
Secretary ..FREDERICK H IHLENBURG, National Aniline Div, Allied Chemical and Dye Corp, 730 Burnside St, Portland 9, Ore
Vice Chairman—A H McKENZIE, JR *Treasurer*—D W KIMSEY

PACIFIC SOUTHWEST

Chairman ..ROBERT A FLIEGEL, National Dyeing & Finishing Corp, 3505 Hayden Ave, Culver City, Calif
Secretary .. CLARICE H LINDSEY, Univ of Calif, Dept of Home Economics, Los Angeles 24, Calif
Vice Chairman—R D ANDERSON *Treasurer*—W M CAMPBELL

AATCC Calendar

COUNCIL
Sept 12 (New York, N Y); Nov 16, Jan 18 (New York); Mar 29 (Roanoke, Va); June 7 (New York)

NATIONAL CONVENTIONS
Sept 13-15, 1956 (Waldorf-Astoria, New York) (as part of the Perkin Centennial, Sept 10-15); Nov 14-16, 1957 (Hotel Statler, Boston); 1958 (Hotel Conrad Hilton, Chicago); 1959 (Sheraton Park and Shorehaam Hotels, Washington, D C)

MID-WEST SECTION
October 27, February 16 (Hotel Bismarck, Chicago, Ill)

NORTHERN NEW ENGLAND SECTION
Sept 28 (Annual Outing—Wachusett Country Club, West Boylston, Mass); Oct 19 (Science Park, Boston, Mass); Dec 1 (Annual Meeting—Hotel Vendome, Boston)

PHILADELPHIA SECTION
Sept 28 (Abraham Lincoln Hotel, Reading, Pa); Nov 2 (Drake Hotel, Philadelphia, Pa); Dec 7 (Kugler's Restaurant, Philadelphia, Pa)

PIEDMONT SECTION
Oct 6 (Annual Meeting—Hotel Charlotte, N C)

RHODE ISLAND SECTION
Oct 18 (Johnson's Hummocks Grille); Dec 6 (Annual Meeting, Johnson's Hummocks Grille)

SOUTH CENTRAL SECTION
Dec 1 (Hotel Patten, Chattanooga, Tenn)

SOUTHEASTERN SECTION
Sept 22 (Columbus, Ga); Dec 8 (Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Oct 5 (Annual Meeting—Hartford, Conn); Nov 16 (Rapp's Restaurant, Shelton, Conn)

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

56-11

Education: Lowell Tech Institute — graduated 1931 BTC — chemistry & dyeing
Experience: Supt dyeing & finishing—natural and synthetic fibers
Age: 48; married; references; South preferred; position in supervision of dyeing & finishing, development, or research desired. 9-10; 9-24

Future Papers

Manuscripts of the following papers, all of which have been presented before local sections of AATCC, have been submitted to date to the publishers of American Dyestuff Reporter. Subject to the approval of the AATCC Publications Committee, all will appear in the Proceedings in future issues.

Authors and Section Officials are requested to inspect this list, and notify the publishers if there are any omissions.

"Aesthetic Standards in Textile Print Designs"—D D and Leslie Tillett, House of T Fabrics

"Wash and Wear Finishes on Cotton Fabrics"— Hector C Borghetty, Rohm & Haas Co

"Silicones in the Textile Industry"—Alton A Cook, Arkansas Co, Inc

MEMBERSHIP APPLICATIONS

July 31, 1956

SENIOR

Rubin Bernstein—Director, research & development, The Clarkson Labs, Inc, Philadelphia, Pa. Sponsors: R E Wolfrom, N A Matlin.

John E Coldren—Supt of dyeing & finishing, E Richard Meinig Co, Reading, Pa. Sponsors: M Bartholomew, E C Diehl.

Adolf G Dabal—Sales & service repr, The Tanatex Corp, Kearny, NJ. Sponsors: S M Weinstein, P J Scott.

Charles E Garland—Research chemist, E I du Pont de Nemours & Co, Inc, Plant Technical Section—"Ponsol," Deepwater, NJ. Sponsors: V R Hurka, R S Wilder.

William S Grottle—Sales, Nitrogen Div, Allied Chemical & Dye Corp, New York, NY. Sponsors: F W Perry, E M Roger.

David Kolodny—Chemist (textile), National Dye Works, Chicago, Ill. Sponsors: J G Kelley, J C Noertel.

Luis Lembcke—Color demonstrator & technician, Du Pont (Peru) SA, Lima, Peru. Sponsors: C A Sylvester, H F Fischer.

James Nigro—Vice-pres, in charge of dyeing, Pad-Dye Corp, Paterson, NJ. Sponsors: O Poltersdorf, C A Whitehead.

Dmitry A Shiraeff—Head of Analytical Lab, General Aniline & Film Corp, New York, NY. Sponsors: C Z Draves, L B Thompson.

Fred G Strakele—Lab technician, American Cyanamid Co, Res Div, Bound Brook, NJ. Sponsors: R E Kourtz, C L Zimmerman.

Whiteman S Truette — Salesman, Schollers Bros, Inc. Sponsors: W R Sargent, U S Almond.

APPLICATION FOR TRANSFER TO SENIOR MEMBERSHIP

James E Farrington
Jean Y Papineau
Walter J Ratcliffe
Albert J Trentesaux

STUDENT

Rosalie L Slowik—New Bedford Institute of Textiles & Technology. Sponsor: F Tripp.

August 24, 1956

SENIOR

Charles F Anthony — Salesman, Original Bradford Soap Works, Inc, West Warwick, RI. Sponsors: W S Barnes, G P Andrew.

Julian J Boyce—Sales repr, Hooker Electrochemical Co, Inc, Niagara Falls, NY. Sponsors: R M Jones, M R Pickler.

Edgar W Dunham, Jr—Yarn sales specialist, Continental Can Co, Inc, Shellmar-Betner Div, New York, NY. Sponsors: N F Vandervoort, R F Roberts.

Ramon M Esteve, Jr—Associate prof of textile research, Texas State College for Women, Denton, Tex. Sponsors: P B Mack, G E Wright.

Arthur Fischler — Colorist, Toms River-Cincinnati Chemical Corp, Cincinnati, O. Sponsors: T Heginbotham, H H Frey.

Aaron C Groce—Sales repr, Southern States Chemical Co, Greenville,

(concluded on page P703)

Piedmont Section———

NEW DEVELOPMENTS IN PEROXIDE BLEACHING*

J L MOORE and T E BELL
Electrochemicals Department
E I du Pont de Nemours & Co, Inc

The authors discuss several developments of major importance, which have attracted considerable interest during the past three years. Some of these developments are concerned primarily with the chemistry of the bleaching process, some with the mechanics and some with both.

Considerable coverage is given the single-stage continuous bleaching process, after which single-stage kier bleach, nonsilicate bleach, and new equipment are briefly discussed.

IT is a pleasure to have this opportunity to discuss with you some of the significant recent developments in peroxide bleaching which are of special importance to the Southern cotton textile industry. We certainly feel indebted to Prof Campbell for his invitation to address you on this interesting subject.

INTRODUCTION

As most of you are aware, there has been what might almost be called a revolution in cotton bleaching methods since the introduction by Du Pont, in cooperation with Cannon Mills and Renfrew Bleachery, of the first commercially successful continuous peroxide bleaching process in 1939-1940. From a rather small and sometimes shaky beginning, this process has grown until today an estimated 85% of all bleaching of cotton piece goods is carried out continuously with peroxide. In addition, a large quantity of vat-dyed cottons is oxidized with hydrogen peroxide or sodium perborate. All in all, the cotton textile industry and the peroxygen chemical industry have many mutually interesting points of contact.

Of major importance, and therefore worth discussing at this time, are several developments which have attracted considerable interest during the past three years. Some of these developments are concerned primarily with the chemistry of the bleaching process, some with the mechanics, and some with both.

SINGLE-STAGE CONTINUOUS BLEACHING PROCESS

We believe that the most important development of the past three years is the single-stage continuous bleaching process, which was announced at the 1954 annual meeting of the AATCC in Atlanta.

Those of you who were associated with the early development of the continuous peroxide process will recall that it was conceived as a single-stage operation. Even in its early development the continuous peroxide process produced acceptable results in bleaching a number of fabric constructions in a single-stage. The two-stage process was developed to take care of those fabrics which could not, at that time, be bleached successfully by single-stage. We are confident that, had the knowledge of steam conditioning, cloth saturation and chemistry of the process been as great 16 years ago as it is today, the majority of continuous bleaching ranges would be single-stage rather than two-stage.

Since our earlier report (*1*), a great deal of laboratory and field work on this process has been done, and it may now be justly considered commercially successful. Several ranges have been running for more than a year, and many more are either in the construction or the planning stage.

As those of you who have investigated this process will agree, it is extremely simple in its basic concept. Theoretically, and practically on some fabrics, it is possible by simply saturating a piece of grey cotton fabric with an alkaline peroxide solution, squeezing to remove excess moisture, heating to 180°-212°F and storing from 60 to 90 minutes, to produce a piece of cloth comparable in nearly all respects to that produced by the most elaborate multistage system. In most cases, of course, it is not quite so simple since many fabrics require desizing, souring or mild scouring as a preliminary treatment, either to improve results, reduce costs or both.

To give you some idea of the quality of fabric produced by this simple method, we have prepared a table which compares average results from 27 samples run with the new single-stage process with 23 samples run with the two-stage process. (See Table I.)

The figures given in Table I are average results; the tests were not all made in exactly the same manner. About half of the single-stage samples were analyzed in accordance with the methods described in the *1955 AATCC Year Book;* the balance by a modified method in which each sample was tested successively for water extractables, enzyme extractables, fats, oils, waxes and ash. The two-stage samples were analyzed by older methods, but substantially in accordance with the AATCC methods. These analytical differences affect the averages somewhat and the data are given simply to provide order-of-magnitude figures.

The figures in Table I indicate that the bleaching results obtained with these processes are substantially the same. We attribute the higher noncotton value obtained in the single-stage process to a residue of converted waxes; this is definitely beneficial, since it increases weight and improves the hand and absorbency. We believe that some of the water-resistant fats and waxes are converted by hydrolysis

TABLE I

Comparison of quality of fabric produced by single-stage and two-stage bleach processes

	Average analyses	
	Single-stage	Two-stage
Hunter whiteness	87.2	86.5
Fluidity, Cuam	6.3	4.9
Noncotton, %	0.98	0.43
Enzyme extractables, %	0.16	0.17
Oils, fats, waxes, %	0.26	0.26
Ash, %	0.28	0.22
Absorbency, seconds	1.9	2.5

*Presented by J L Moore before the Piedmont Section at North Carolina State College, Raleigh, NC, on April 7, 1956.

to products of lower molecular weight, which actually serve as wetting or rewetting agents.

To achieve the results presented earlier, careful attention to the bleaching process is essential. It should be remembered that, in the single-stage method, all processing takes place in one step and that careful control is necessary to get consistently satisfactory results.

While the methods and formulas used vary with the fabric being processed, the end result desired and the equipment available, there are certain general conditions which apply. The following is a basic method, which will give good results on most fabrics in most equipment.

SINGLE-STAGE PROCESS

Pretreatment

1) Singe: Except for knit goods, most fabrics are singed, using the conventional equipment best suited to the fabric.

2) Desize: In many cases an enzyme desizing is necessary or desirable. This is carried out by saturating the cloth, usually in the quench box of the singer, with

1.25% Enzyme desizing agent
0.1 % Wetting agent

Scour and Bleach

The cloth is washed after desizing and then saturated as follows:

2.5-3.5% Albone 35 hydrogen peroxide
1.5-2.5% Sodium silicate 42° Bé
0.3-0.5% Caustic soda (100%)
0.3-0.5% Borax decahydrate

Following saturation, the cloth is squeezed to 100-110% liquid, to remove excess chemicals and water. It is then heated by steam to 205°-210°F and stored in a J box for 60-75 minutes to complete the reaction.

In cases where complete freedom from residual starch is not a requirement, the process can be modified by eliminating the enzyme pretreatment and substituting for it either a mild scour with a wetting agent and a phosphate, such as sodium tripolyphosphate, or a grey sour.

The single-stage process is not limited to white goods, but is effective also on goods to be dyed and on yarn-dyed fabrics. Dyes which ordinarily stand the two-stage process are satisfactory also in the single-stage system.

The chemical cost of operating the single-stage system is somewhat higher than the two-stage process but the over-all operating cost is lower. Additionally, there is a very large saving in capital investment, which for a new mill is often the deciding factor. Table II covers both operating and investment costs and shows clearly that, under today's conditions, a new single-stage system is much more economical than the two-stage process.

TABLE II

Estimated cost and investment comparison. Single-stage vs two-stage systems for continuous peroxide bleaching of woven cotton fabrics

Note: This estimate is based on an annual production of 50 million yards of 80 x 80 fabric weighing 4 oz/yd, or 12,500,000 pounds.

Essential materials	Unit price	Units used	Single-stage	Units used	Two-stage
Albone 35 hydrogen peroxide	18 ¢	3.0%	$67,500	1.0%	$27,000
Sodium silicate	3 ¢	2.0%	7,500	1.0%	3,750
Caustic soda	3.4¢	0.5%	2,100	4.1%	17,400
Borax	4.5¢	0.3%	1,700		
Total cost—essential materials			$78,800		$48,150

Utilities		Single-stage		Two-stage
Water	10¢/M gal 3M gal/1000 lb	$ 3,750	6M gal/1000 lb	$ 7,500
Steam	60¢/M lb 1M lb/1000 lb	7,500	2M lb/1000 lb	15,000
Power	1¢/kw-hr 28 kw-hr/1000 lb	3,500	47 kw-hr/1000 lb	5,850
Labor (3 shifts)	$2.00/hr 1 man/shift	12,580	2 men/shift	25,000
Overhead	50% of operating labor	6,252		12,500
Employee benefits	15% of operating labor	1,900		3,700
Maintenance	3% equip, 1% bldg	3,300		5,300
Taxes & insurance	½% equip & bldg cost	800		1,300
Depreciation	8% equip, 4% bldg	9,800		15,800
Total utilities, etc.		$ 49,300		$ 91,950
Total operating cost		$128,100		$140,100
Estimated operating saving		$ 12,000		
Investment				
Equipment cost + 17% for Installation		$100,000		$160,000
Buildings		72,000		120,000
Total		$172,000		$280,000
Savings on Investment		$108,000		

ADVANTAGES OF PROCESS——

1) *Lower Initial Investment.* The initial investment per unit of cloth produced is approximately 60% of the investment required in a two-stage system of equal capacity.

2) *Lower Operating Cost.* There is a slight advantage in operating costs and in many cases, they are lower than those of the two-stage process.

3) *Excellent Results.* Analyses of fabrics bleached with both one- and two-stage processes indicate that results with the single-stage method are equal to and often superior to those obtained by the two-stage method.

4) *Less Mechanical Handling.* Since one J box and the saturating and washing equipment usually employed in the two-stage range are eliminated, there is much less mechanical handling.

5) *Less Utilities.* Due to the reduced equipment necessary, requirements for power, water and steam are substantially reduced.

6) *Labor.* The labor required per unit of cloth produced is approximately two-thirds that of the two-stage system.

7) *Space.* The building space required is about 60%, a particularly important detail when new equipment must be installed in existing buildings.

8) *Increased Production.* In mills now operating two-stage system, production can be doubled by splitting the existing range in two and operating as two single-stage systems. Usually the purchase of one extra washer will be the only additional investment required.

SINGLE-STAGE KIER BLEACH

The single-stage process is also adaptable to batch bleaching in kiers, slack washers or package machines. Since kiers are still used in some mills, a process such as this can frequently be used to increase production or reduce processing time.

The following is a description of a general method which has been found satisfactory. The particular fabric used in this case was 80 x 80, 4-yd print cloth, but the process can be adapted to a wide variety of fabrics by making minor changes in formula or procedure.

The cloth (8,000-8,300 lb) is singed

and then saturated with an enzyme desizing solution, stored for a period and then washed with warm to hot water into the kier. A mechanical kier piler using an alkaline peroxide bleaching solution is used to load the goods into the kier.

The bleach solution charge is made up to contain: 205 lb sodium silicate, 6 gal 50% liquid caustic soda, 35 lb Borax, 175-250 lb Albone 35 hydrogen peroxide, 5-10 lb wetting agent and detergent. The chemicals are dissolved in 1500-2300 gallons of water, depending upon the water carried into the kier by the goods. The solution is heated to 110°F before being run to the kier.

When all the cloth has been loaded into the kier, it is held in place by stainless-steel chains. The bleach liquor is circulated through the goods and heated to a temperature of 190°-200°F over a period of 1½ hours. Bleaching is carried out at 190°-200°F for 4 to 5 hours. The bleach charge is drained to the sewer and the goods washed in the kier with hot water. Following this, the cloth is pulled through a washer containing warm to hot water to the white bin.

Results of the single-stage kier bleach are equal to the customary two-boil peroxide method. While the chemical cost is somewhat higher, the over-all bleaching cost is, in most cases, comparable to, if not lower than, that of the two-stage kier process. The single-stage kier process has the further advantages of doubling production if required, and decreasing the mechanical handling, which is very important if fragile fabrics are being processed.

NONSILICATE BLEACH

During the past two years, there has been increased interest in bleaching formulas which do not contain a silicate for stabilizing purposes.

Nonsilicate formulas have been used for textile bleaching, particularly in the wool-bleaching field, where tetrasodium pyrophosphate replaced silicate many years ago. Some fifteen years ago, a process based on a formula containing sodium peroxide, magnesium sulfate and tetrasodium pyrophosphate was developed for bleaching cotton knit goods. This was successfully applied to batch bleaching in kiers and slack washers, but was never used extensively in continuous processing.

A great many attempts have been made, mostly unsuccessful, to develop a formula which would eliminate silicates in the continuous peroxide bleaching process and still do a satisfactory bleaching job at a reasonable cost.

TABLE III

Average analyses of cloth processed with and without silicate

	Typical analyses	
	Nonsilicate process	Silicate process
Hunter whiteness	87.0	86.5
Fluidity, Cuam	7.1	4.9
Noncotton, %	0.49	0.43
Enzyme extractables, %	0.13	0.17
Oils, fats, waxes, %	0.18	0.26
Ash, %	0.03*	0.22
Absorbency, seconds	1.2	2.5

* Goods were soured after caustic scour.

Successful large scale trials employing the following formula have been carried out:

1.5% Albone 35 hydrogen peroxide
2.0% Sodium tripolyphosphate
0.1% Epsom salts
0.2% Perma Kleer 80 dry beads

The headtank solution which feeds the saturator is made up at about 5 times the above concentration. At 80° F, the solution is stable for 4 to 8 hours.

Preliminary data indicate that the above formula can be modified for single-stage bleaching by both the continuous and kier processes.

In these trials, the goods were caustic-treated, washed, soured with sulfuric acid and washed prior to the peroxide bleach. We would like to point out that our most successful nonsilicate runs have included a sour between the caustic scour and the peroxide bleach. This seems to be helpful in improving the stability of the bleach bath and also in keeping the fluidity low. It may not be necessary in all cases, but should be given consideration.

An indication of the results to be expected may be seen in Table III. The fabrics were bleached in the two-stage continuous process.

As is obvious from these data, the nonsilicate process compares favorably with the more usual silicate method, and can be used as a substitute if conditions necessitate. It is simple to use, and requires no special handling or controls. It is available without license to all peroxide users in the United States.

Since it is a little more expensive chemically (about $1/1000 lb) it will be used most advantageously in mills where scale is especially troublesome. In these cases, reducing the damage done to goods being prepared for dyeing and eliminating the cost of periodic shut-down for descaling may more than compensate for the higher chemical cost.

EQUIPMENT

No paper on new peroxide bleaching developments would be complete without some reference to new equipment. In the past two years, Proctor & Schwartz, with assistance from Du Pont, has perfected a single-stage system for cotton knit goods which uses a catenary conveyor belt for cloth storage instead of a J box. This is in successful operation at a Southern mill, and it is a real contribution to the art of peroxide bleaching.

Ever since the first J box was designed and built, there has been a demand for improvements which would permit operation at higher speeds, at higher temperatures and with less mechanical handling of the cloth. Du Pont, with the help of the engineering staff at Jos Bancroft & Sons, has recently redesigned the J box to do all of these things and also to reduce the initial cost. This has been done by removing part of the heater tube, by moving the steam distributor to the front of the J box, and by simplifying the piling mechanism. This results in a J box of improved operating characteristics, which is especially suited to preparing goods for dyeing.

Any existing J box can be changed over to this new design at a reasonable cost, and a number of mills have already made the conversion.

There are also underway studies aimed at improving the continuous process by increasing the speed of bleaching and thus decreasing the size of the storage chamber required. These studies are past the laboratory stage, and are now being developed in the machine design section of a prominent manufacturer of textile equipment. When perfected, the textile industry will be advised promptly.

SUMMARY

The past several years have seen the perfection of a new single-stage bleaching process, a new silicate-free formula, and new types of storage units for continuous processing as well as a start toward still better processes and equipment. For much of the incentive to do these things, the chemical and equipment manufacturers are indebted to the textile industry. With their help and cooperation, we are certain that the progress outlined today will continue on an ever increasing scale, with benefit to all concerned.

LITERATURE CITED

(1) Bell, T. E., Terhune, H. D., Potter, H. L., and Rowe, M. H., "Some Notes on the Technology of the Single-Stage Continuous Bleaching Process", *Am Dyestuff Reptr* **44**, No. 10, P317 (May 9, 1955).

Piedmont Section———

HIBULK ACRILAN*

S JACK DAVIS

The Chemstrand Corp
Decatur, Ala

The author discusses the hibulking principle the commercial Acrilan Hibulk staple and tow which is available, Hibulk products produced on the Pacific Converter, and products made on the Turbo Stapler. He then leads into the possibilities of application of Hibulk fibers in a variety of textile structures by describing some interesting combinations.

I. THE HIBULKING PRINCIPLE

Acrilan acrylic fiber has, among its many interesting characteristics, the ability to assume a temporary set which is stable at ordinary temperatures and humidities for a prolonged period of time. To all appearances, this metastable fiber is in no way different from the stable fiber except, perhaps, for a difference in crimp and slight difference in denier. This fiber may be processed through ordinary textile equipment in blends with regular fiber with no appreciable change in physical properties and without any significant changes in the textile processing procedure because of its presence. Figure 1 shows a stress-strain curve for ordinary Acrilan acrylic fiber and the stress-strain curve for the Hibulk fiber.

This metastable fiber modification may be produced experimentally very simply. If one should hold a filament or yarn in his hands over a hot plate for sufficient time to heat the fiber and then should draw the fiber slightly—10 to 20% at will—and then withdraw the fiber from the hot plate and allow it cool while under tension, this fiber would then be in the metastable state described. In short, the process consists of stretching a heated fiber and cooling the fiber under tension, followed by release of the tension.

We may now hold this filament in our hands carelessly, we may store it on our laboratory shelves for months, or we may even subject it to mechanical agitation—provided, of course, we do not raise the temperature too high. If, however, we choose to place it in an oven, or preferably in boiling water or steam, this fiber immediately shrinks to its original dimension, *and no further*. We may have started out with a 3 dpf fiber and in hot stretching we pulled it down to 2.6 denier. Upon relaxing the fiber in hot water, we then find that it has returned to its 3 dpf size. And it is important to note that the extended fiber returns to its original length.

If one had a yarn made up of 100% metastable fibers, the yarn would behave quite similarly to the filament just discussed. Upon treatment with relaxing conditions, the yarn would shorten and become heavier. This alone would be an increase in yarn diameter, but it is certainly not the ultimate which may be achieved in bulking yarns.

Preferably, one may have a blend of shrinking with nonshrinking fibers. After the yarn is made, it is subjected to relaxing conditions whereupon the shrinking fibers quickly go to their original length and denier, and shorten the entire yarn in the process. The blended nonshrinking fibers, intermingled as they are with these shringing fibers, have no choice but to pucker, and the puckered fibers give an effective diameter to the shrunken yarn out of proportion to the increase in denier upon shrinking, and the yarn actually occupies a much greater volume. This is illustrated in Figure 2.

To use some arbitrary figures, it is possible that a 20/1's yarn of a Hibulk blend may, upon shrinking, actually become a 16/1 yarn in weight. But the diameter of the yarn shrunk in this way could well be equivalent to the diameter of a 12/1's regular yarn. Since one of the interesting intrinsic properties of acrylic fibers is their bulk without undue weight, deriving from the low specific gravity (1.17 for Acrilan, for example) this additional bonus of volume without added weight compounds the interesting possibilities of achieving warmth without a weight in a variety of textile fabrics.

The Hibulking principle which we are considering, therefore, relates to the production of a voluminous textile yarn resulting from the differential shrinkage of shrinking and nonshrinking modifications of the fiber in an intimate blend.

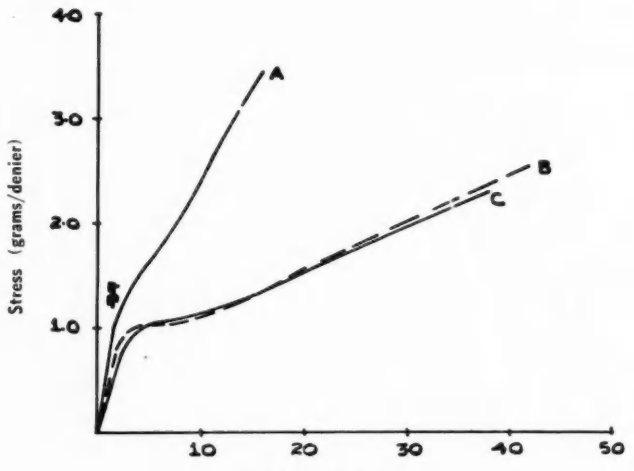


Figure 1
Stress-strain curves for regular Acrilan and Hibulk Acrilan
A—Hibulk Acrilan
B—Hibulk after relaxing
C—Regular Acrilan

*Presented before the Piedmont Section on October 29, 1956.
NOTE: Acrilan is a registered trademark for Chemstrand's acrylic fiber.

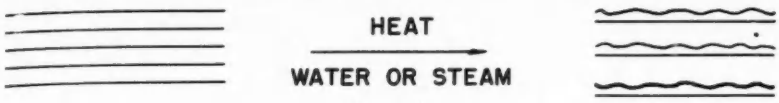


Figure 2
Diagram of the Hibulking Process

II. ACRILAN HIBULK STAPLE AND ACRILAN HIBULK TOW

2.5-denier Acrilan Hibulk staple in all commercial staple lengths and 2.5-denier Hibulk Acrilan tow are available commercially.

Acrilan Hlbulk staple may be processed on the cotton system, the worsted system, and the woolen system in blends with regular Acrilan staple or even with other staple fibers. Our studies have largely been confined to 100% Acrilan combinations.

BLEND COMPOSITION —— A systematic study of the requirement of Hibulk fiber for achieving shrinkage and bulking has revealed that the shrinkage of spun yarn is not proportional to the percent Hibulk fiber present. Greater amounts of Hibulk fiber (above 40%) do not appreciably alter the shrinkage characteristics of the yarn. These same effects are observed on the bulk of the yarn produced from these blends.

However, it should be remembered that the load-carrying member of this textile structure resulting from the bulking operation is the residual Hibulk fiber. All other fibers have been puckered from their normal position and do not serve to bear their share of the mechanical load at low orders of extension. Consideration of this would then lead one to believe that one should have as high a Hibulk fiber composition as possible.

Evaluating the various aspects of blend composition, it becomes apparent that blends containing from 35% to 50% Hibulk staple are best with respect to yarn shrinkage and bulking, with respect to relaxed yarn strength, and with respect to textile processing. If one contains his blends within this range, and this range is not at all strictly defined, he can be reasonably assured that the blend will process well through his textile equipment with little modification of settings normally used for processing 100% relaxed Acrilan fiber.

RELAXING CONDITIONS —— The Hibulk fiber in the blended yarn may be easily relaxed by the use of high temperature alone or by steam or by boiling in hot water. Steam or boiling water cause the shrinkage to occur practically instantaneously.

Systematic studies have shown that the yarn does not shrink within a reasonable period of time (1 hour) in water at temperatures up to 160°F., but that the shrinkage occurs quite rapidly at 180°F. and above.

Interestingly enough, it is possible to slash yarns of Hibulk blend Acrilan. Even though the yarns are immersed in the sizing bath and dried on steam cans, if tension such as normally employed be present, the dried yarns in the warp can subsequently be woven and then the fabric can be Hibulked.

HIBULK ON THE WOOLEN SYSTEM———Most of the data just presented apply primarily to yarns spun on the cotton system or the worsted system. Experience with Hibulk fiber blends on the woolen system is quite limited, but there are indications that the shrinkage effect is not so pronounced for woolen yarn, quite possibly because of the more random configuration of the fibers in the yarn.

III. PACIFIC CONVERTER PROCESSING — HIBULK PROCESS

The Pacific Converter has been in use quite a number of years now and is perhaps too well known to require detailed description in this presentation.

Very briefly, the basic machine is designed to take a combined tow of approximately 2 million total denier into the machine and to cut the fiber by crush-shearing. This is followed by the drafting operation (in the so-called shuffling section) in which the individual fibers are separated through drafting operations, and finally the web from the operation is conveyed by a continuous conveyor and mechanically collected by the action of a diagonal spiral roll into a rough sliver form. This then is passed through a crimper, where a light mechanical crimp is imparted to the top which serves to hold the top together. Subsequent processes include pin draftings, roving and worsted spinning.

The fiber produced in this way has a square staple diagram, the length of fiber being predetermined by the cutting roll selected. The only tension applied to the tow is that required to straighten out the crimp, and in essence the fibers produced are no different from those which are furnished as regular staple from our manufacturing plant. Of course the yarns produced by this process just described may be bulky in comparison with other spun fibers, but they have not reached the ultimate in possible bulk by the process.

A variable cutter attachment is also available which affords a variable staple length.

Two means are at hand for achieving Hibulk blend combinations on the Pacific Converter. In the first of these, a portion of the tow is diverted from the main course through a special heater with mechanical stretching. The stretched tow is then recombined with the unstretched tow and is cut in the conventional way on the Converter. In literal fact, the Hibulk modification of the fiber is manufactured in continuous fashion on the Converter.

The second alternative is to make up the tow feed for the machine from a combination of regular Acrilan tow and Hibulk Acrilan tow as furnished commercially. This procedure eliminates the necessity for the hot stretching attachment and also appears to improve the processing, since the fibers are at room temperature when they reach the cutter.

The top produced by either of these routes is regularly processed through the pin drafter, worsted roving and worsted spinning. Alternate procedures have employed cotton system processing. However, the advantage of lowering twist with increase in staple length appears to favor the Hibulking process.

Fiber denier and elongation properties after relaxing are essentially the same as the regular fiber.

IV. HIBULK YARNS FROM THE TURBO STAPLER

The Turbo tow stapler, developed by J L Lohrke, is a very interesting recent addition to the family of tow-handling equipment. This machine is equipped to heat-stretch the tow, and continuously to stretch-break the tow into fiber. There generally results a slight decrease in fiber denier and a staple diagram which shows all possible fiber lengths from the maximum set by the machine down to fly of very short staple lengths. The web of broken fiber is passed on continuously into a mechanical crimper, producing a top which can be handled in subsequent worsted processes.

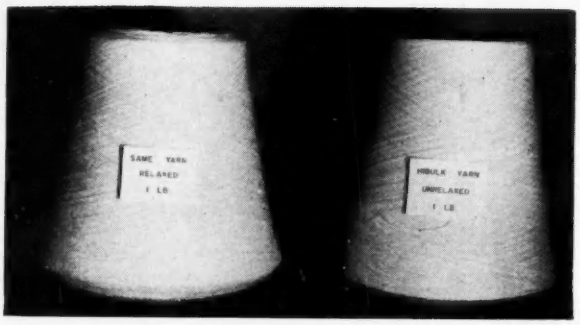


Figure 3
Comparative bulk of one pound of unrelaxed (right) and relaxed Hibulk blend yarn wound under the same tension

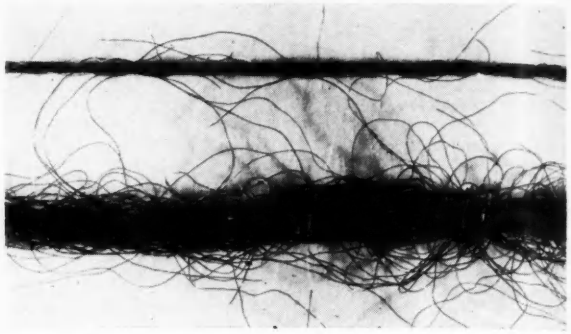


Figure 4
1/32's Turbo-converted worsted Acrilan yarn before (above) and after (below) relaxation. Relaxed yarn count is 1/26's

In the conventional system of manufacture, a portion of this top is placed in the so-called crimp setter, an autoclave which was originally developed as a preboarding machine. This top is relaxed by treatment alternately with steam and vacuum, and considerable shrinkage is removed from the fiber. In our laboratory, the relaxed top is then combined with the unrelaxed top on a conventional gill, using rather coarse tooth-count on the combs, and serves both to break the somewhat condensed relaxed top and also to blend this relaxed top with the unrelaxed top direct from the Turbo Stapler.

The blended stock is then pin drafted twice, the pinned sliver is then taken to the roving frame, and thence to the worsted spinning frame.

Combining relaxed and unrelaxed top in this way again gives the Hibulk blend about which we are speaking this evening. That is to say, there are shrinking and nonshrinking fibers in the blend.

In recent history, fly on knitting these yarns and uneven shade matches have occasionally been encountered in the acrylic fiber field. Extensive careful work has resulted in procedures for yarn manufacturing which will preclude these troubles.

Production via the Turbo system and Pacific system has thus far been almost exclusively for the knitting trade. The knitgoods produced from these yarns are characterized after dyeing and finishing by an unusual and attractive hand which has been quite popular.

V. USES OF HIBULK BLENDS

KNITTED OUTERWEAR——Of course the most extensive use of Hibulk blends today is in the knitwear field, particularly for sweaters. As just pointed out, the sweaters have an unusually pleasing hand and are quite serviceable. Such sweaters, made of Acrilan, are an important addition to the ease-of-care wardrobe of today's busy ladies.

The outerwear jersey knit fabrics also have found wide acceptance in ladies' wear. Dresses made from this material are very convenient to maintain, they may be durably pleated, and there is no need to worry about moth damage in storage. In addition to the wide range of colors available with Acrilan, prints are now being made of these jersey fabrics, affording wide variety in design and color for milady's autumn and winter wear.

UNUSUAL FABRICS——

1) *Puckers.* As far as we know, Chemstrand was the first to call attention to the Hibulk principle in woven goods when, in September, 1954, samples were shown to the designers associated with various customers. This first work was to alternate stripes of Hibulk yarns with stripes of regular yarns. Upon finishing the fabric, a puckered effect resulted which of course had the same durability, launderability, and crease-retentive properties as the unpuckered plain fabric.

2) *Crepes.* The first crepe-type fabrics resulted from the study of puckers just described. When the alternate stripes became alternate yarns, a crepe-type fabric resulted.

Further experimentation showed that twisting regular and Hibulk yarns into plied yarns and weaving them would also give crepe-type fabrics.

3) *Plain-Woven Novelties.* Interesting and novel effects have been obtained by combining, for example, filament nylon with Hibulk Acrilan in a two-ply yarn, followed by weaving. After shrinking and cross-dyeing, interesting color and texture effects are obtained which are more easily demonstrated than described.

4) *Fabrics Having Unusual Hand.* I realize that to describe fabrics having unusual hand is to descend to the commonplace of description, and yet no other term seems to describe the possibilities. For example, a suede-like hand has been produced in a fabric consisting of Hibulk yarn in both warp and filling directions.

It should be pointed out, in fairness particularly to the fabric designer, that the conventional rules of fabric designing do not apply directly for fabrics employing Hibulk yarns. Fabric development with these yarns is best accomplished by experimentation on looms followed by steam relaxing and dyeing.

We have earlier pointed out that Hibulk yarns may be prevented from shrinking in hot water by restraining this shrinkage with tension. Quite similarly, their shrinkage may be minimized by tight fabric construction. For example, we have obtained entirely different effects in the same warp by merely varying the pick count! And, of course, in plying the Hibulk yarn with a regular yarn, the ply twist is of real importance and must be determined experimentally.

Finally, I would call your attention to the fact that the shrinkage which results when a Hibulk yarn is relaxed is a predetermined shrinkage. If full shrinkage is achieved in finishing, no further shrinkage from laundering the fabric is to be expected. The ease-of-care, the washability, the muss-resistance, and other delightful attributes which characterize regular Acrilan fabrics are still characteristics of fabrics made from (fully relaxed) Hibulk Acrilan.

THE ACCELEROTOR*
for Abrasion Testing and Other Purposes

H W STIEGLER, H E GLIDDEN, G J MANDIKOS, G R THOMPSON†

This paper presents a brief, general picture of the Accelerotor, the principles involved and its development.

A new instrument and new principles have been developed for extremely rapid abrasion testing and mechanical manipulation of textiles and other flexible materials.

The instrument, its scope and versatility are described. Theoretical principles are briefly discussed, such as *random motion* of an *unfettered* specimen (which permits the specimen to "talk back" to the forces imposed) substitution of high velocity for large mass; types of action achieved, as flexing, rubbing, scuffing, shock, compression, stretch and other forces.

Evaluation methods are indicated including percent weight loss, appearance, color loss, light transmission, and air permeability. Reproducibility is illustrated.

Attention is directed to the distinction between *frictional* (no-grit) abrasion and sharp, cutting, *grit* abrasion. The Accelerotor provides rapid means of creating this very important distinction. Photomicrographs of detritus, fibers and yarns obtained from the two types of abrasion are shown, as well as yarns and fibers from actual wear in end-use.

Though dry and wet wear and laundering abrasion are given primary consideration, some other applications of the Accelerotor are mentoned: dye penetration; felting and shrinkage of wool; effect and durability of finishes; detergency; pilling; edge-wear of cuffs, collars and seams; fraying tendencies of fabrics; non-woven fabrics; paper scuffing and creasing; glass fabrics; coated fabrics; blended fabrics; automobile upholstery and seat covers; knitted fabrics; treating of leathers; etc.

Another important advantage of the Accelerotor is the carrying out, in the same instrument, of *alternate* dry wear and washing cycles to predict end-use wear effects in a few minutes.

Numerous research applications of the Accelerotor are possible. It has been shown that much may be learned about natural and synthetic fiber characteristics under various conditions available in the Accelerotor, by microscopic examination of fibers and detritus with respect to fracture and other evidence of degradation.

*U S Patent 2,749,740 H W Stiegler. Others pending. "ACCELEROTOR" copyrighted. ATLAS ELECTRIC DEVICES CO; 4114 N Ravenswood Ave, Chicago, Ill. Sole manufacturer.

†Contribution from the American Association of Textile Chemists & Colorists Research Laboratories, National Headquarters, Lowell Technological Institute, Lowell, Mass; G R Thompson, Administrative Manager; G J Mandikos, Technical Manager; H E Glidden, Research Associate.

INTRODUCTION

THE increasing importance of end-use requirements of textiles, particularly with respect to wear and laundering abrasion, emphasizes the need for realistic test methods closely related to characteristic end-use effects. At the same time such tests should embody sound scientific principles as well as simplicity, speed, accuracy and reproducibility.

To reproduce, on a laboratory-scale instrument, the results of full-scale

Figure 1
Accelerotor—side view. (Test chamber closed.)

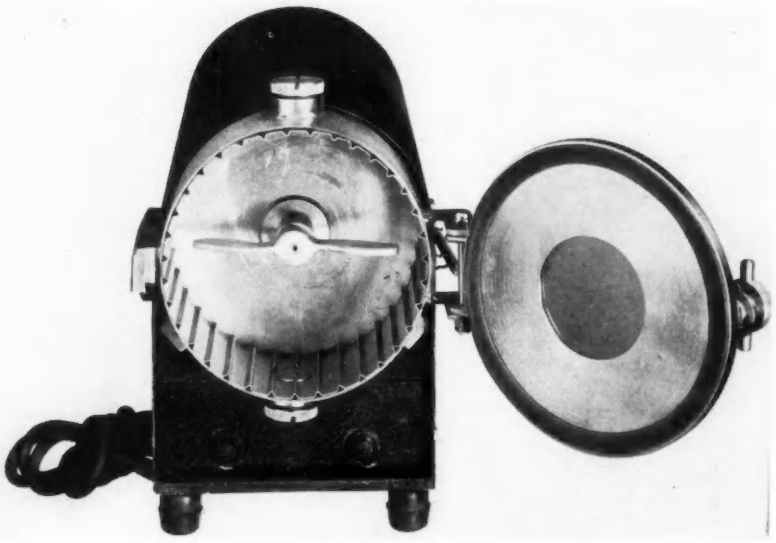


Figure 2
Accelerotor—front view. (Test chamber open.)

equipment and end-use effects is not an easy matter. In the past, practically all abrasion methods were directed toward scraping or wearing a hole through an immobilized test specimen. This restricted the results to only a few of the many factors involved in natural wear and end-use treatments. Therefore, instrumentation and procedures were sought which would include as many as possible of the factors which contribute most to the degradation and unserviceability of textiles and other flexible materials. A test instrument and method were desirable which would permit a single specimen to register colorfastness to abrasion (both wear and laundering); all the effects of flexing; frictional abrasion of surface, internal yarns and even fiber against fiber; as well as the effect of sharp cutting abrasion with grit. Especially desirable was a small instrument which incorporated high speeds to reduce testing time to a matter of a few minutes—without sacrificing true relationship to such processing effects as preparation, dyeing and finishing of textiles and to natural end-use wear.

The Accelerotor was designed to meet the requirements of dry and wet abrasion testing, as well as for other textile applications, in the same test chamber by simple and easy insertion of suitable collars and the addition of liquids when necessary. Various degrees of abrasion may be attained by non-abrasive or abrasive liners placed on the removable collars. These liners are manufactured to range from smooth or ribbed no-grit surfaces to those of low-grit through high-grit content of the coatings on the liners.

A high-speed instrument and very rapid but still realistic test procedures have been devised.

THE ACCELEROTOR

The Accelerotor (see Figures 1 and 2) is an instrument for subjecting textiles and other flexible materials to abrasion. Dry, moist and wet wear abrasion tests (such as laundering and drycleaning) may be accomplished at a highly accelerated rate within a few minutes. Many other applications are available.

The instrument consists primarily of a chamber within which rotors or impellers of special design revolve at controllable high speeds. High speeds impart high velocity and kinetic energy to the test specimens with resultant extremely rapid and forceful impacts. The various types of abrasion and flexing achieved produce results within a few minutes, which bear close and realistic relationship to the effects of ponderous, slow-moving forces encountered in wearing, laundering or dyecleaning garments and other textiles over a long period of time.

Figure 3
Numerous Uses of the Accelerotor. Exhibited at AATCC Convention to illustrate versatility. Each chart represents a different application.

PRINCIPLES

1) *Velocity.* The substitution of high velocity for large mass, whereby light-weight laboratory specimens moving freely at high speed receive increased kinetic energy of impact and so approach the effects of the heavy, slow-moving loads and forces of end-use wear and mechanical cleansing.
2) *Random Motion.* This permits response of the *unfettered* specimen to the imposed forces whereby it is free to move in any direction at any time. It also permits constant flexing and change of position, which in turn causes changes of surface contacts, stresses and strains throughout the fabric and its components similar in effect to end-use wear and cleansing. Random motion and the high number of flexings and impacts tend to average out extremes of action much as in natural wear. Rotor blades are pitched to cause the specimen to flutter in a "zig-zag" path around the interior of the chamber and carome forcefully back from the sides.
3) *Types of Action.* Flexing, rubbing, scuffing, shock, compression, stretch and other forces occur throughout the test in any desired degree. Thus abrasion is caused throughout the body of the cloth by surface against surface, surface against metal or abradants, yarn against yarn and fiber against fiber.
4) *Versatility.* This is achieved in

WEAR-ABRASION
4-Minute Test

Dry Damp Wet

Figure 4
Influence of moisture content. Effect on color loss and wear degradation of OD Army herringbone twill. Specimen at right was tested dripping wet, thus increasing its weight and force of impact.

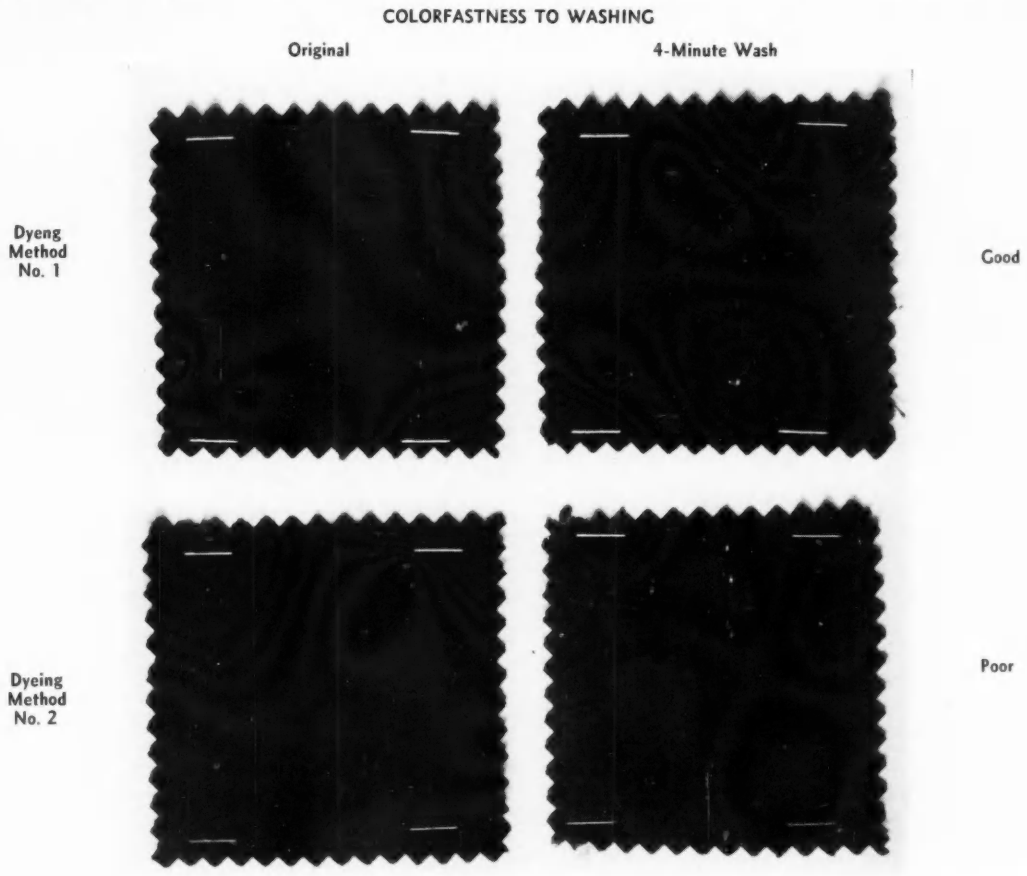


Figure 5

Measure of dye penetration. Same dye formula was used for both dyeing methods. Differences visible to the eye are greater than photographically shown.

numerous ways. Speed may be sacrificed at the expense of time. Varied length and shaped rotors alter severity and type of action and are inter-related to time and types of liners. These and other inter-relations provide interesting research tools.

5) *Evaluation.* Various means may be used: percent weight loss of the specimen, visual appearance, color loss, light transmission through the worn fabric, air permeability, hand, time to reach comparable end points, microscopic evaluation of detritus, fibers and yarns, which often yields valuable information about the nature of the material and the action imposed. Many other specific effects may be used for evaluation.

Weight loss methods tell a better story if the level of weight loss is not too low. For many medium weight fabrics a weight loss level ranging 10-15 percent is more indicative than a 3 percent level. Work clothes fabrics may be in the order of 20-30 percent or more to show certain differences, although distinction between fabrics may be noted at lower levels.

For all practical purposes a difference between fabrics under comparison, at proper levels of weight loss, of one-half or even one percent may not indicate a critical difference in actual end-use behavior.

6) *Reproducibility.* Excellent reproducibility (Table I) has been obtained in the Accelerotor with reasonable care and attention in test operation.

TABLE I

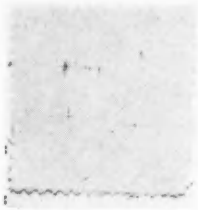
REPRODUCIBILITY* PERCENT WEIGHT LOSS — COTTON TWILL

	Set #1	Set #2	Set #3
	11.3	12.7	12.6
	11.2	12.5	12.7
	11.7	11.7	12.5
	11.6	11.7	12.9
	11.3	11.9	11.3
	11.3	11.1	11.3
	11.2	11.5	11.3
	11.5	12.3	10.4
	12.1	12.0	10.5
	12.2	11.5	12.1
	11.5	10.9	10.1
	10.3	11.6	10.0
	10.4	12.4	10.3
	12.0	11.8	11.5
	12.3	11.5	10.4
Av	11.3	11.7	11.3
sd:	.58	.50	.99
se:	0.16	0.13	0.26
Variation	5.1%	4.3%	8.7%
True value	11.3±0.2	11.7±0.1	11.3±1.0

*Also indicates durability of abrasive liner.

SCOPE

Some of the more important applications (Figure 3) and possibilities of the Accelerotor are:



Original 3"x3"

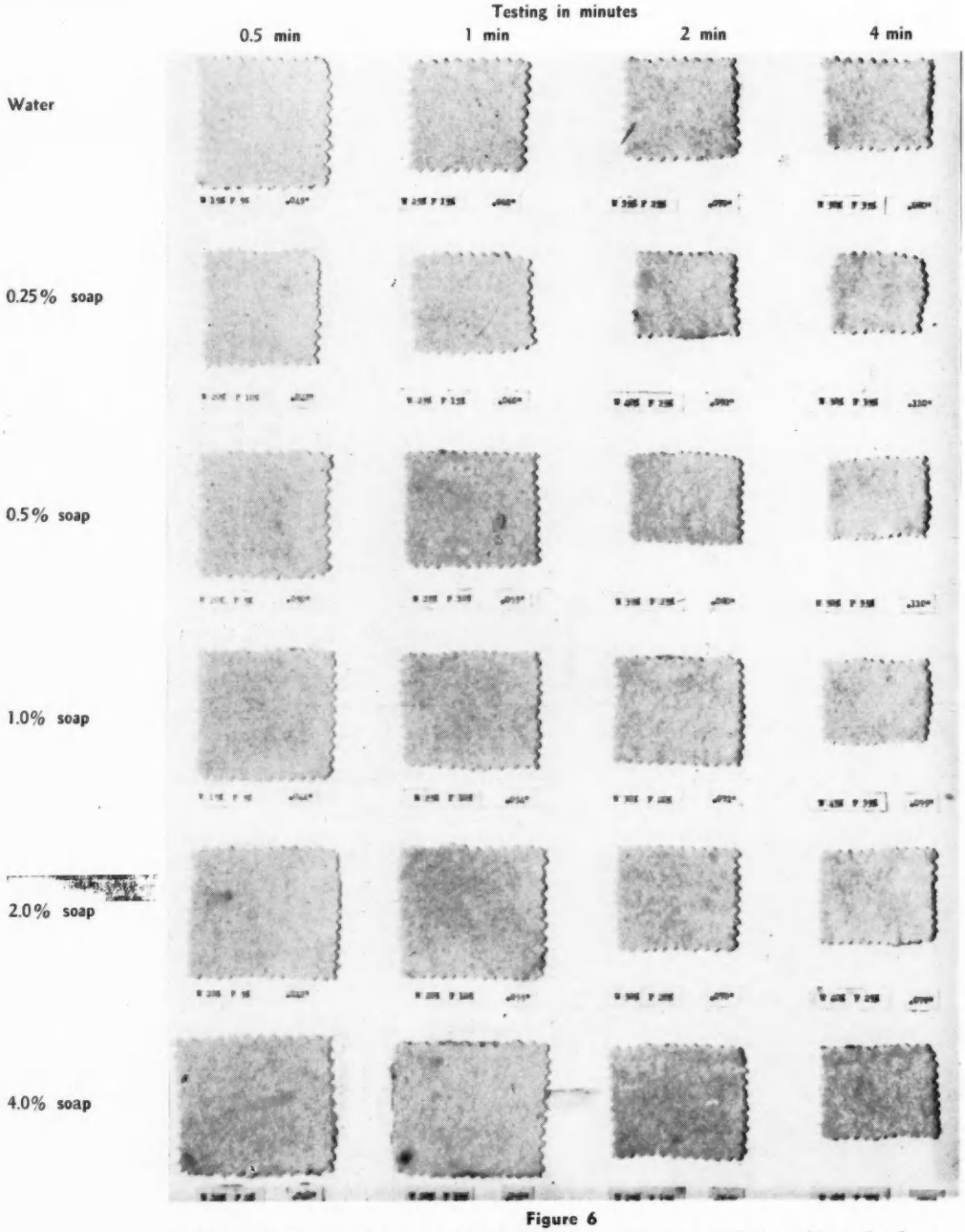


Figure 6
Wool shrinkage and felting. Effect of soap concentration and time. Note shrinkage decreases after 1.0% soap.

Figure 7
Pilling properties. The pilling tendencies of fabrics may be demonstrated in the Accelerotor. To avoid loss of pills a "Bag Test" was devised to insure retention of the pills formed by friction inside the bag.

Abrasion—dry, moist, wet, laundering, drycleaning. (Quantitative determinations of weight loss or color loss. Color loss of dyed textiles which are *sensitive* to laundering *abrasion*).

Study of dye formulations to provide component dyes having the best resistance to abrasion.

Dye penetration. (Figure 5)

Prediction of life-wear of both fabric and abrasion-sensitive color by means of alternate cycles of wash and dry wear abrasion in the same chamber, which may be quickly converted from one cycle to the other.

Felting and shrinkage of wool cloth. (Figure 6)

Pilling. (Flat or "pillow" form specimen, the latter form tending to prevent inside pills from being removed or lost). (Figure 7)

Edge wear, such as occurs on collars, cuffs, sleeves, pant cuffs, seams, etc.

Evaluation of detergents and soils especially with respect to the important part played by mechanical action in soil removal.

Drycleaning abrasion.

Finishes. (Durability and other effects of additive shrink- and crease-resistant finishes, appearance or anti-mussing finishes, etc) (Figures 8 and 9)

Dimensional changes of fabrics, particularly shrinkage.

Fraying tendencies of fabrics. (Edge wear or raveling of threads at cut portions.) (Figures 10 and 11)

Nonwoven fabrics. (Figure 24)

Blistering of laminated or fused collars in laundering.

Scuffing and creasing of paper. (Figure 23)

Leather scuffing and penetration.

Glass fabrics abrasion resistance.

Coated fabrics.

Plastic films and fabrics.

Knitted fabrics.

Processing and quality control, eg, vat dyeing range. (Swatch test of three or four minutes in the Accelerotor has approximated thirty commercial launderings in colorloss due to abrasion vs three weeks to obtain thirty actual commercial launderings. The test also indicates penetration and fixation of color.)

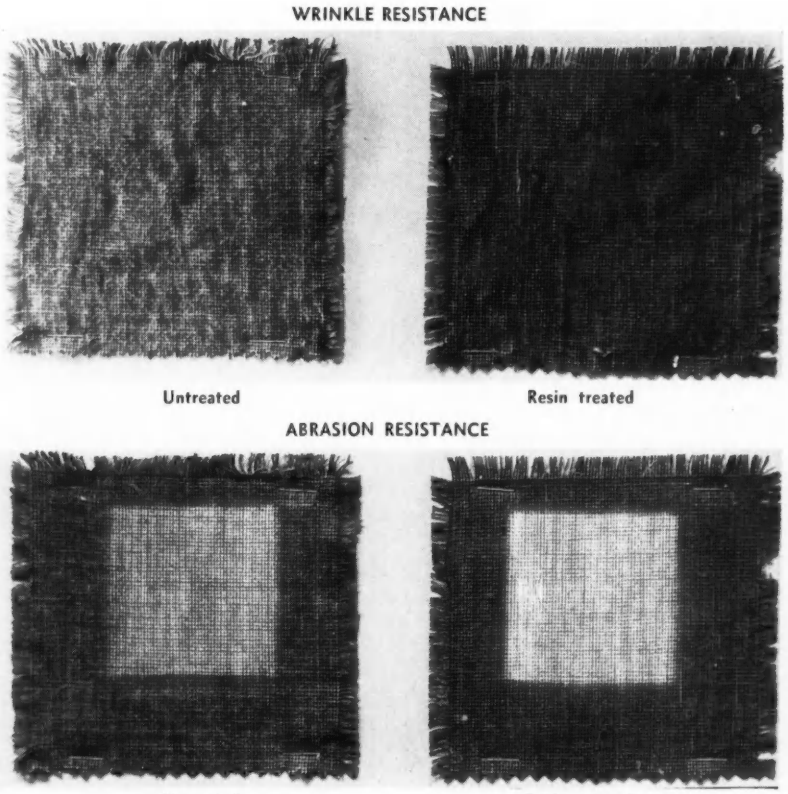
It should be emphasized that the user of the Accelerotor undoubtedly will set up such conditions of operation, time, speed and severity of test which are best suited for the specific requirements peculiar to a given industry, plant or laboratory.

In colorfastness to washing tests the Accelerotor does not in any way replace the Launder-Ometer or the AATCC Standard or Accelerated Tests. The Accelerotor is an *adjunct* to the Launder-Ometer for extremely rapid tests, particularly where sensitivity to abrasion is important and is a major factor in producing colorloss on material dyed with fast dyes, such as vats, developed and pigments, and where penetration and fixation are of interest. The instrument is not intended for bleeding or staining of colors because of the very short time of test. It is only for abrasion-sensitive dyed material. For bleeding, staining, alkali and soap effects over a long period of time, the Launder-Ometer and AATCC tests must be used.

OPERATION

Operational details and testing procedures for the numerous uses of the Accelerotor cannot be delineated here in detail but are treated in the Accelerotor Manual and will be elaborated in future publications concerning testing applications of the instrument.

Functioning of the Accelerotor is very simple. A manually operated variable voltage transformer controls the speed. An electric tachometer registers the speed on the scale.



Figures 8 and 9
Two properties evaluated in one test. This Accelerotor test showed that this particular resin treatment gave good wrinkle resistance but decreased the abrasion resistance of this fabric considerably. Thus, the Accelerotor can be used to determine optimum resin treatment for a desired result.

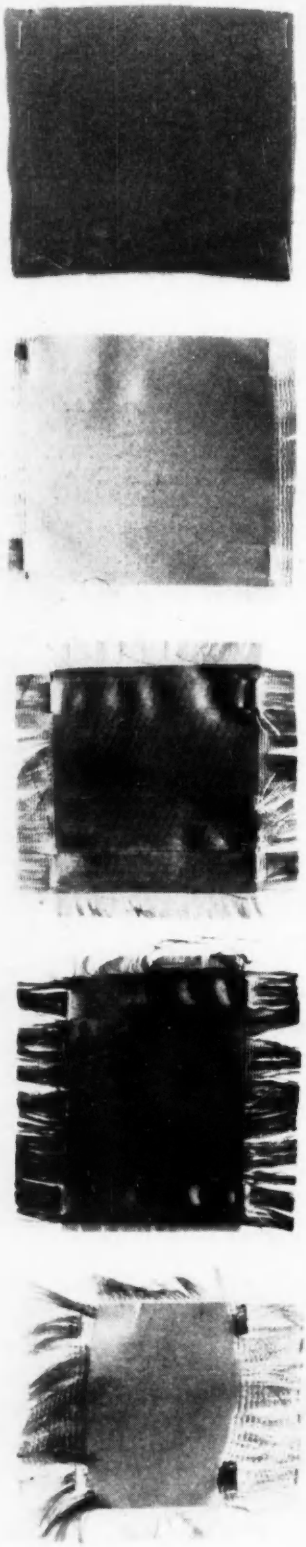


Figure 10
Fraying properties of lining fabrics. 30-second test in Accelerotor. The five fabrics shown were of acetate, viscose or acetate/viscose composition.

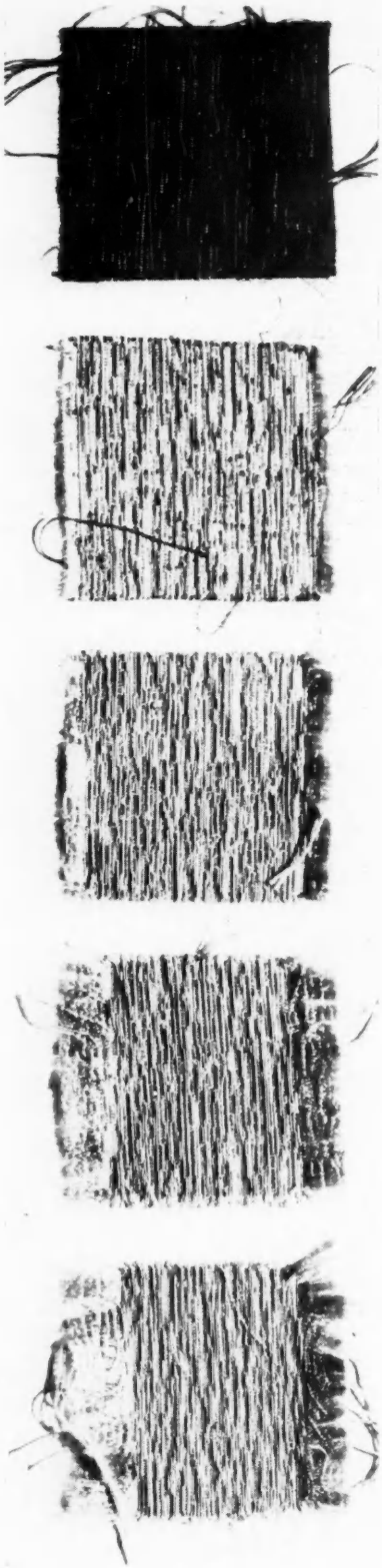


Figure 11
Fraying properties of upholstery fabrics. 30-second test in Accelerotor. The five fabrics were of similar construction but different fiber composition and/or finish.

SPEED——Speeds used for most dry abrasion tests range between 2000 and 3500 rpm, depending on the character of the test specimen with respect

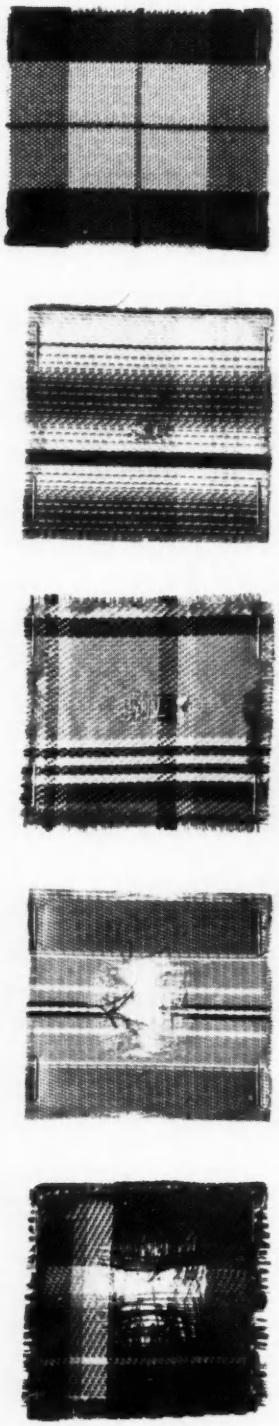


Figure 12
Automobile seat covers. Comparison of five fabrics for durability. (9-minute test.)

EFFECT OF GRIT IN LINER ON CHARACTER OF WEAR
(Warp Yarns from 6-oz cotton twill)

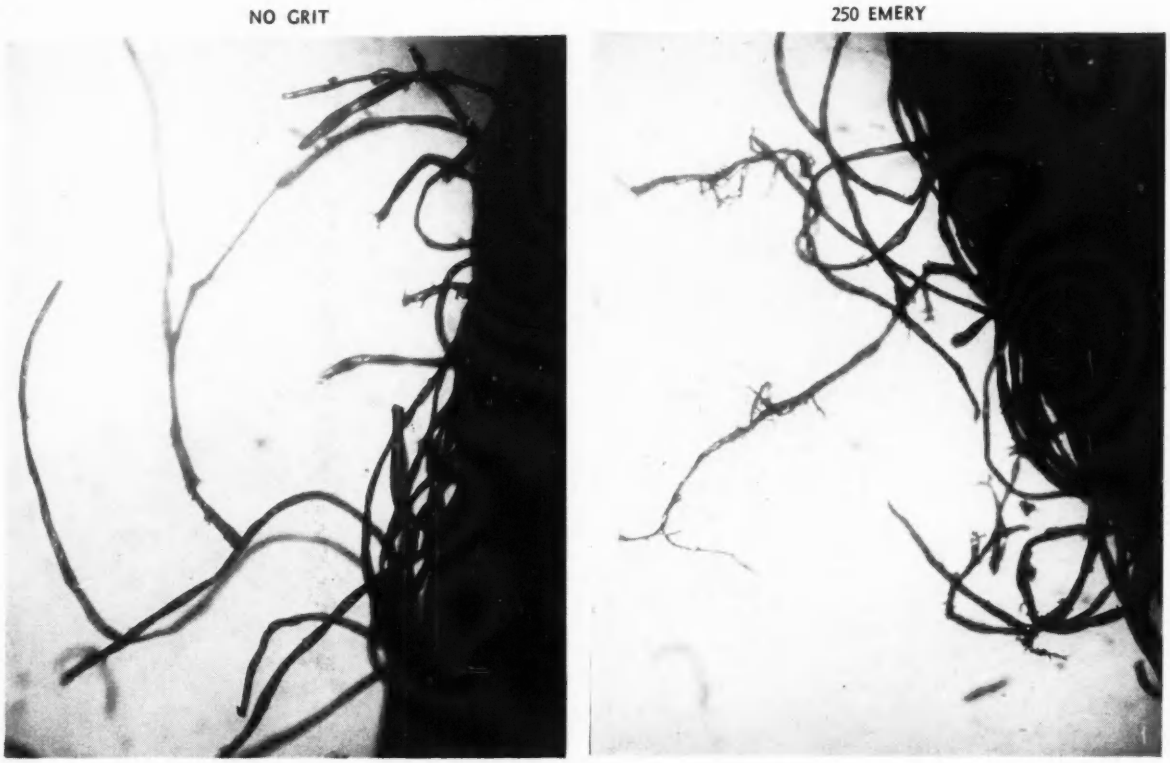


Figure 13

Grit vs no-grit in abrasive liner. Note 1) considerable amount of fibrils (due to grit) on ruptured fibers in photomicrograph on right, and 2) fibers cleaner and free of fibrils (no-grit) on left.

to size, weight, thickness and stiffness. Washing and drycleaning abrasion tests are accomplished with low liquor ratios in the chamber because low ratios favor abrasion and high ratios decrease abrasion. Lower speeds are used for liquid tests than for dry tests and vary from 1500 to 2500 rpm, again depending on size, weight, thickness and stiffness of the specimen.

TIME ——— Timing may be manually controlled or automatically controlled by ordinary laboratory timers in the line. Most tests or cycles may be run from a few seconds to five or ten minutes duration.

COLLARS———For dry wear tests, plastic collars are lined with flexible liners ranging from smooth to harsh grit surfaces. For wash or drycleaning tests metal or rubber collars are used. These have ribs of varying height, slope and spacing.

LINERS———Dry wear liners are specially manufactured for the Accelerotor and are made of flexible fabric coated with smooth or grit-containing coating mixture. These liners can be made in ranges from smooth, stippled or slightly roughened (as neoprene sponge rubber) surfaces for purely *frictional* abrasion to grit liners having fine to coarse grades of grit incorporated in varying percentages in the binding material. These grit liners furnish a sharp, cutting type of abrasion for fabrics subject to this type of abrasion in end-use such as military fabrics or certain work clothing fabrics. The varying proportions of grit within the coating on the liner provides surfaces having sparsely scattered grit or ranging up to highly populated grit approaching an almost completely grit surface. Thus a very wide range of abrasion effects may be made available.

These liners will stand multiple use and may be washed or scrubbed to revive the surface and free them of gummy finishing and fiber debris which clogs all abrasive surfaces, particularly if finishes are not removed before testing.

It appears that sharp abrasive surfaces may not be as realistic for wear testing of certain kinds of fabrics as purely *frictional* abrasion induced by plain surfaces which create a slight drag and cause the specimen to change position and undergo internal friction. (See Figure 13, photomicrographs of grit vs no grit detritus.)

To soften and approach more realistic frictional and abrasive action it has been found that a layer of sponge or foam rubber under the liner is very effective. The liner "gives" and softens the blow of the rotor, in contrast to the unyielding hardbacked liner.

SPECIMENS———Test specimens are usually cut in the form of squares approximately five inches or less, depending on the weight, bulk and stiffness. The edges are raveled slightly and "edged" with a thin line of adhesive to prevent fraying or unraveling of threads during the test.

EFFECT OF GRIT IN LINER ON CHARACTER OF DETRITUS
(Fibers from 6-oz cotton twill)

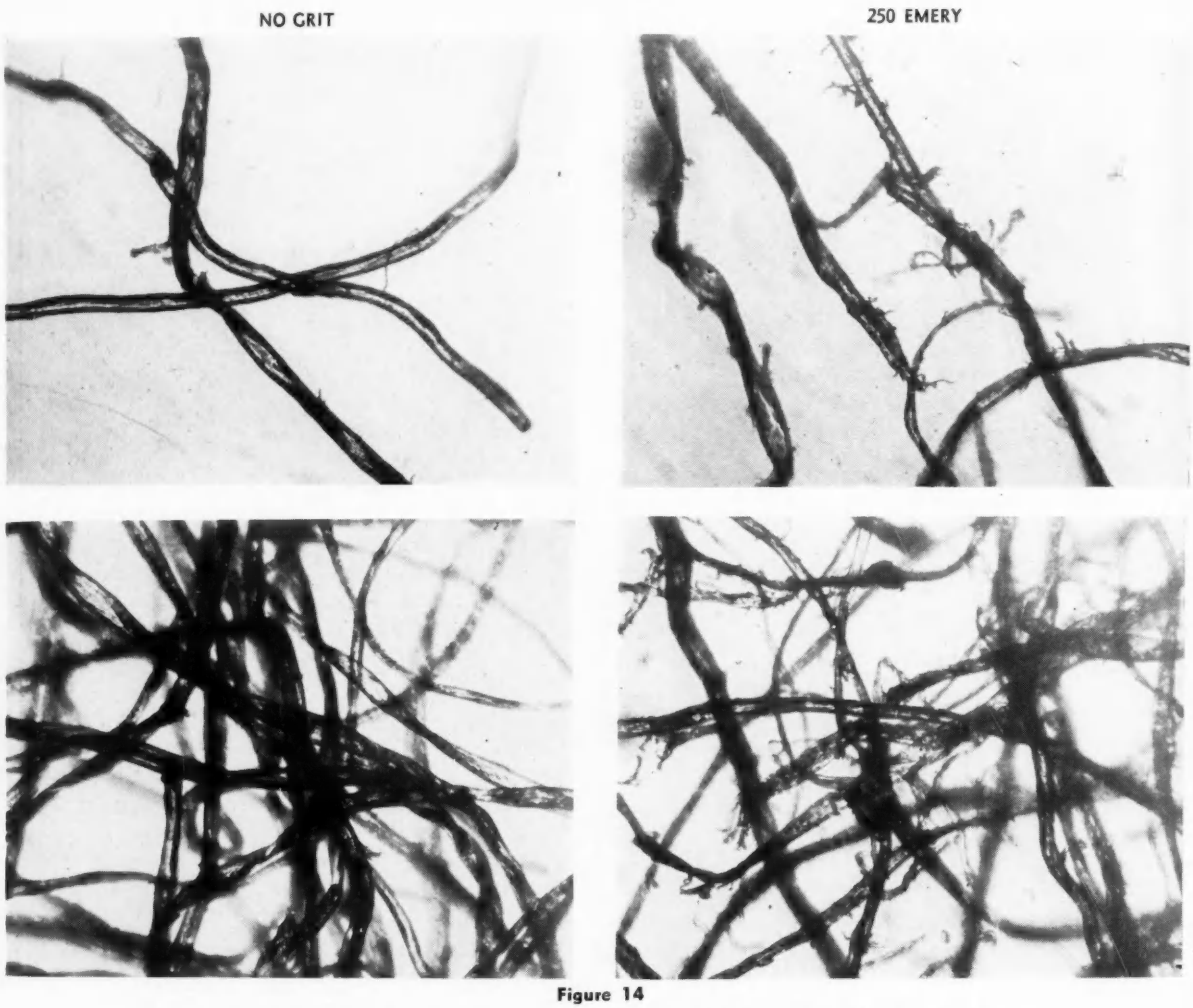


Figure 14

Study of detritus. Note considerable amount of fibrils on detritus obtained by use of grit liners.

OPTIONAL VARIATIONS OF TEST PROCEDURES

CONSTANT SPEED —— One of the most used and quantitative tests is the weight-loss determination after the specimen has been run under prescribed conditions at a selected constant speed maintained by the operator. As the specimens become more limp and lighter in weight, the speed tends to increase. Adjustments are made by the operator to counteract this tendency and so maintain accurately the prescribed speed.

UNCONTROLLED SPEED —— In this method the *specimen* itself governs the speed from the time of start to the end of the test. The speed dial is not touched by the operator after the start of the test. The bulk, weight and stiffness of the fabric determine the speed at which the specimen will start. This speed will increase as conditions will permit. The starting speed will be lower for heavy, stiff fabrics. Lighter specimens will start at higher speeds. This method has interesting possibilities as a modification of the weight-loss method of abrasion testing for comparing fabrics or research on their characteristics.

GRIT VS NO-GRIT ABRASION

Most abrasion tests are run with grit surfaces as abradants. For some purposes and end-use results such tests are realistic, as in the case of armed forces on sandy or rocky terrain, work clothing used in rough work such as handling bricks, working on rough, sharp cement surfaces, handling rough iron or other metal materials, etc. However, for ordinary garment wear it appears that *frictional* abrasion is more important. Such wear is a result of yarns and fibers rubbing against each other and gradually wearing the fibers and yarns thinner and to a breaking point.

The difference between *grit* abrasion and smooth, *frictional* abrasion is strikingly shown in Figures 13 and 14. The grit causes formation of fibrils, nicks and cuts which are easily discerned in the photomicrographs of both detritus and yarns. *Frictional* abrasion leaves the fibers and yarns cleaner and free of fibrils. This dis-

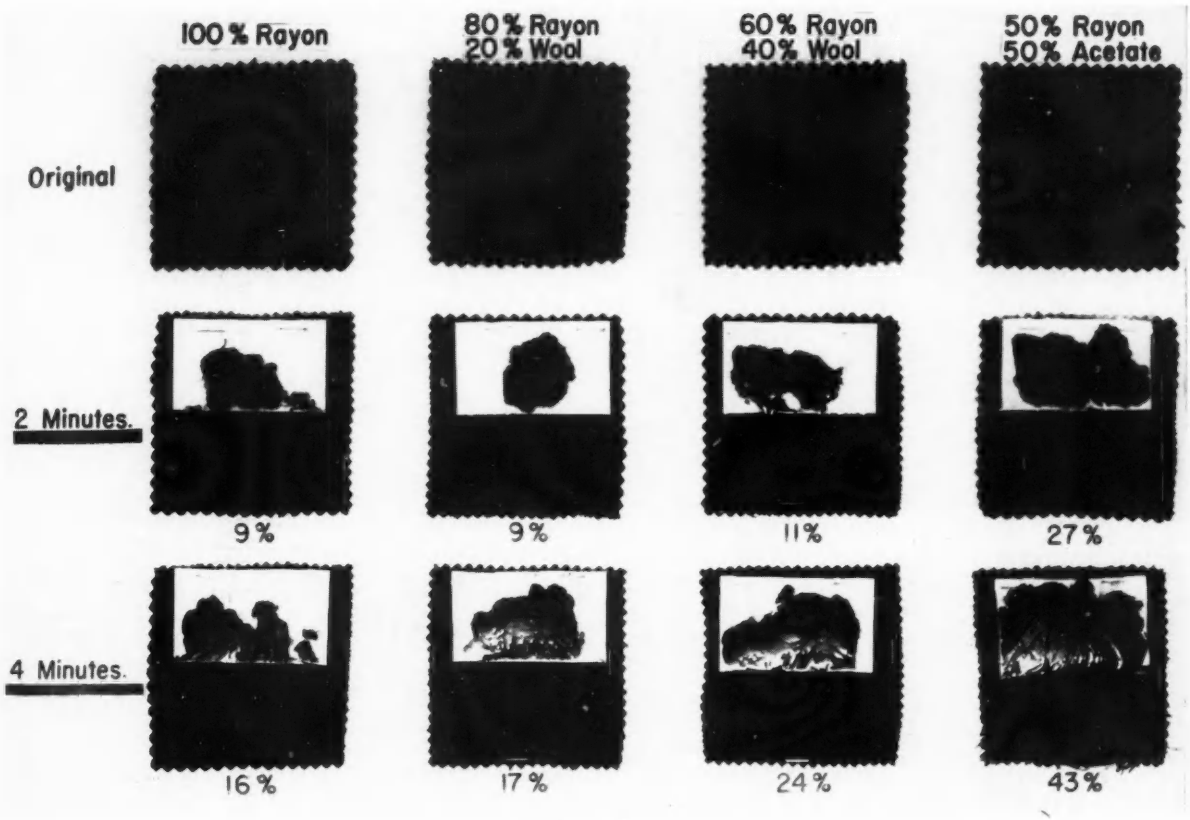


Figure 15

Evaluation of blends. Detritus obtained from each tested specimen was placed in cellophane bag (backed by white paper) which is attached to upper half of each specimen on chart.

tinction and its implications are being further pursued.

END-USE WEAR REPRODUCED IN THE ACCELEROTOR

An example of exact reproduction of the natural wear pattern by the Accelerotor is shown in Figures 25 through 29.

A pair of Army chino pants was worn over a period of two years. The wear included outdoor garden work as well as indoor work but included very little really severe wear involving sharp grit abrasion.

Examination of the close-up (Figure 26) reveals practically identical wear damage patterns. The warp yarns apparently protected the filling yarns. The filling yarns separated to appear as small patches or groups. These are readily distinguished by means of the back-lighting of the severely worn area.

Yarns teased out of the naturally worn areas showed very little fibril formation under the microscope. The appearance closely resembles *frictional* type of wear rather than wear caused by sharp grit.

Edge-wear tests in the Accelerotor reproduce readily the natural wear at the bottom of the trouser cuffs as shown in the close-up (Figure 27).

Edge-wear tests on identical cotton shirt collar material duplicated exactly the natural wear pattern on the collar of the shirt worn over a period of several years (cf. Figures 28 and 29).

The adaptability of the Accelerotor should provide interesting results in the AATCC attempts to bring about better correlation between end-use results and laboratory testing procedures.

EVALUATION

DRY ABRASION———Weight loss of the specimen and microscopic examination of detritus to determine the nature of fiber fracture, fibril formation, etc, furnish quantitative, reproducible (see Table I), valuable information and clues regarding fiber, yarn, fabric and processing treatments. The effect of finishing treatments may be readily followed by weight loss methods. (Figure 9). Color differences occur when some dyed fabrics lose substance, especially if poorly penetrated by the dye. (Figure 4). An example of dry wear of mixed fiber fabrics is illustrated in Figure 15.

As the fabric becomes thinner, strength is lost and may be measured; light transmission through the fabric may be measured or visually rated; air permeability may be measured but is more susceptible to variations; stiffness will decrease. Embrittlement of fibers and yarns by excessive or faulty finishing treatments may be readily followed by the weight loss method and appearance tests.

Edge-wear is primarily intended for visual evaluation of wear effects on cuffs, collars, seams, etc. It furnishes a quick, simple way to compare fabrics or treatments. A series of ten acetate and mixed fiber fabrics having a

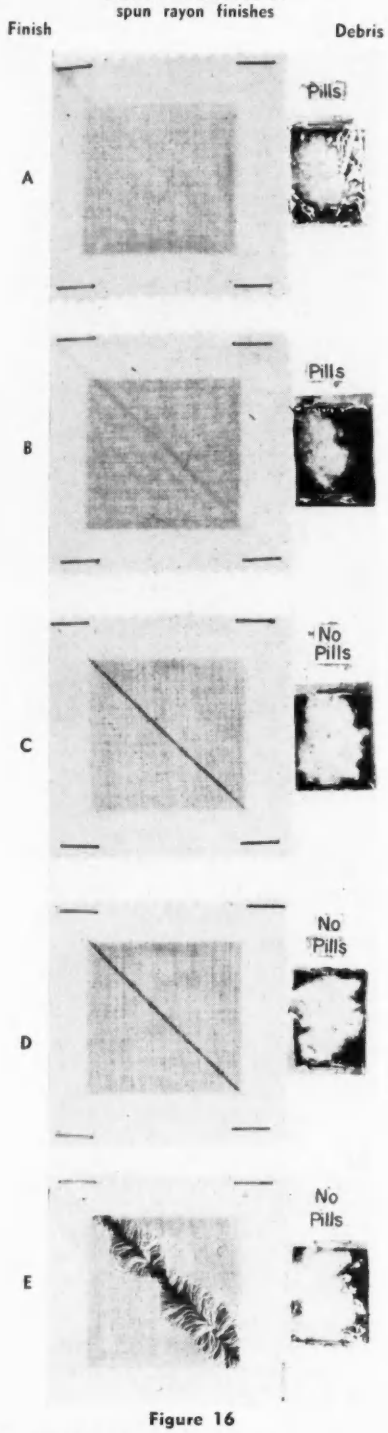


Figure 16

Evaluation of resin treatments on rayon. (Note that specimens are mounted over cut-out "window" on white cards. A black card was placed in back of the cut-outs to afford convenient comparison of the white specimens.) Specimens with greater wear on edge appear thinner due to greater weight loss. Also specimens with more abrasion-resistant finishes had a tendency to form pills while contrary was true of poorer finishes.

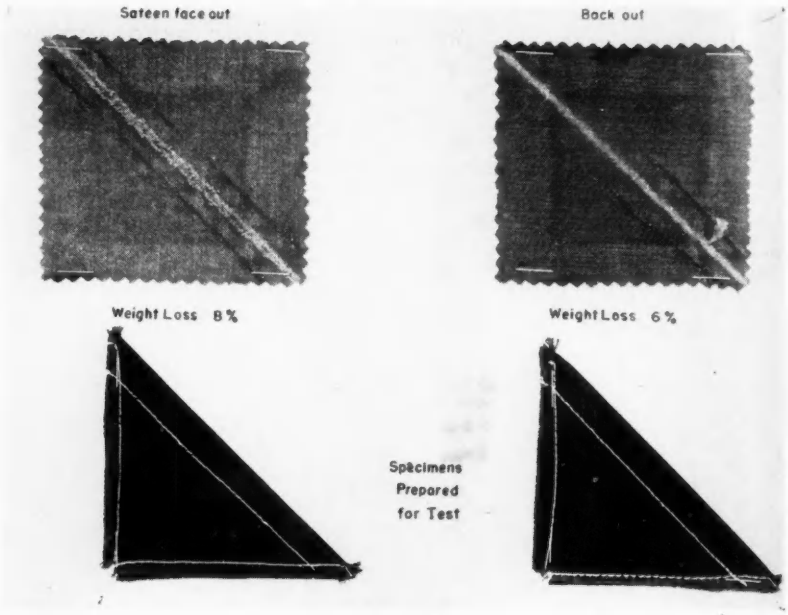


Figure 17

Face versus back of sateen. Difference in wearing properties between face and back of a 9-oz sateen shown by Accelerotor edge-wear test. These results confirm Army Quartermaster findings that the back of the sateen wears better than the face.

known history of ten years on the market were tested in the Accelerotor. The instrument rated them exactly in accord with their market ratings (Table II). Figure 16 illustrates the effect of varying finishing treatments on viscose rayon and it is pointed out that as the fabric becomes weakened and brittle there is more pronounced edge-wear as well as decrease in pill formation. Edgewear evaluation is also visually indicated in Figure 17 where the instrument confirms the findings of the Army Quartermaster that the back of a 9-oz sateen wears better than the face. Colorloss may be quantitatively determined by reflectance measurements or visually rated.

TABLE II

WEAR EVALUATION OF TEN LINING FABRICS

Acetate and Mixed Fiber Fabrics

Wear Point* Minutes	Accelerotor Ranking	Customer Acceptance**
15.0	1	1
12.0	2	2
9.0	3	3
7.5	4	4
7.5	5	6
6.0	6	5
6.0	7	7
4.5	8	8
3.0	9	9
1.5	10	10

*Time required to show wear edge of specimen folded across filling threads. (Using no-grit liner)
**Based on a ten-year history.

Monochrome photographic reproductions are not very satisfactory but Figure 18 gives an indication of the change.

WET ABRASION —— Colorloss due to abrasion in laundering may be readily followed by the Accelerotor. Reflectance measurements may be recorded by instrument or visually rated. A test period of three to four minutes has produced the equivalent color loss (of a series of dyed and printed fabrics) to thirty commercial launderings. (Figure 19). Thus considerable time may be saved in following production, with respect to colorfastness to abrasion without recourse to tedious commercial laundering tests.

Detergency and soil removal testing are very readily accomplished in the Accelerotor. (Figure 20). Time, temperature, type of soil, speed, liquor ratio all may be varied to best evaluate the effectiveness of detergents, standard soils, detergent concentrations, etc. Reflectance tests or visual evaluation are made.

ALTERNATE DRY AND WET ABRASION———Alternate wear and wash tests are quite realistic and most helpful in correlating with end-use effects. Both wear and wash tests may be carried out in the same instrument by simple change of collars or liners. Figure 21 illustrates this method and

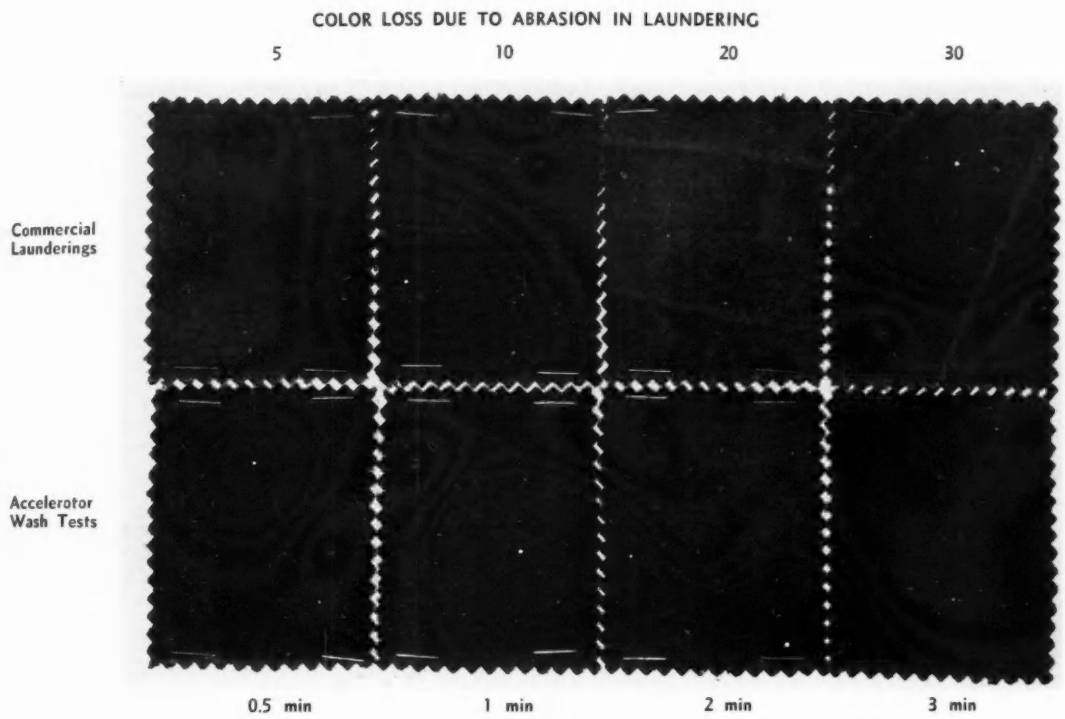


Figure 18

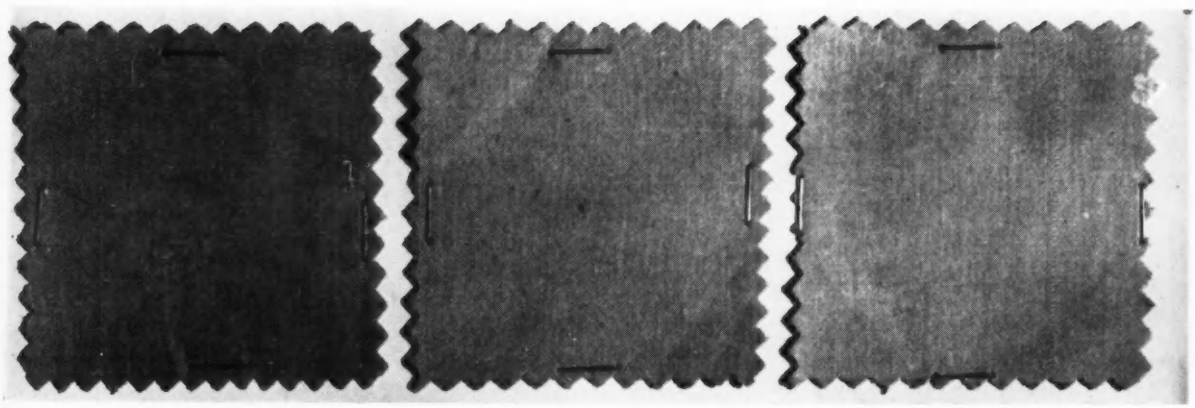
Color loss due to abrasion in laundering. It was difficult to show photographically the shade changes of this OD sateen which were visible to the human eye.

snows also the individual contribution of dry abrasion and wash abrasion to the combined result of alternate wear-wash cycles.

By means of such wear-wash cycle testing in the Accelerotor it appears possible to test the life of both fabric and color within less than thirty minutes, depending on the number and time of the cycles.

DRYCLEANING ABRASION——Drycleaning tests are similar to other wet tests, such as washing, in the way they are carried out. Flock effects (Figure 22) are susceptible to such abrasion as well as other surface ornamentation or effects.

TEST METHODS —— Standard test methods, ratings and classifications of results obtained in testing with the Accelerotor are under development and will be provided after thorough study and further interlaboratory testing by AATCC committees and cooperating laboratories.



Original | 30 Commercial launderings | 4 minutes in Accelerotor

Figure 19

Four-minute wash test. Approximates color loss due to abrasion after 30 commercial launderings.

MISCELLANEOUS APPLICATIONS

PAPER———Figure 23 illustrates the possibility of testing paper for

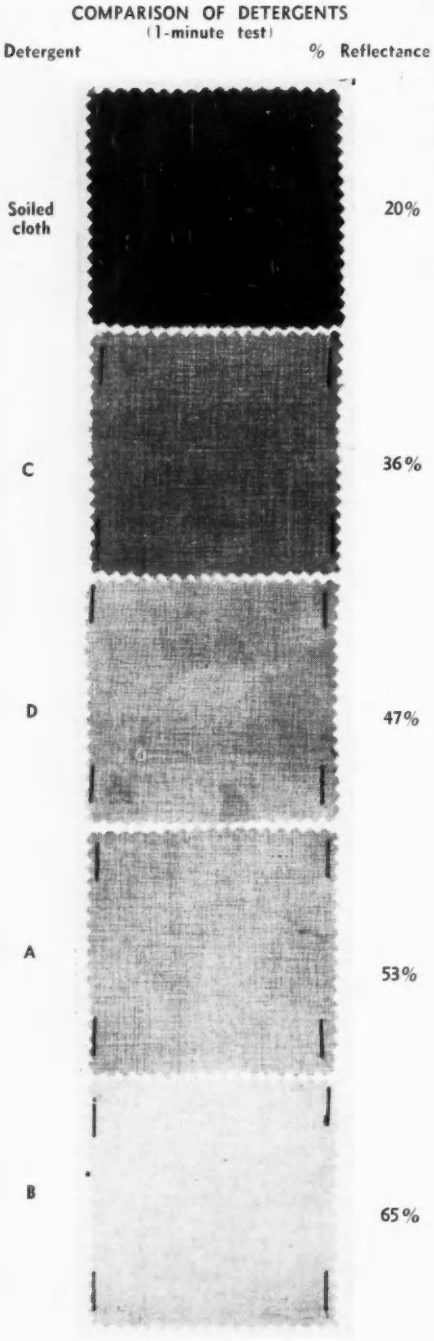


Figure 20
Evaluation of detergents. Mechanical action is a very important factor in soil removal.

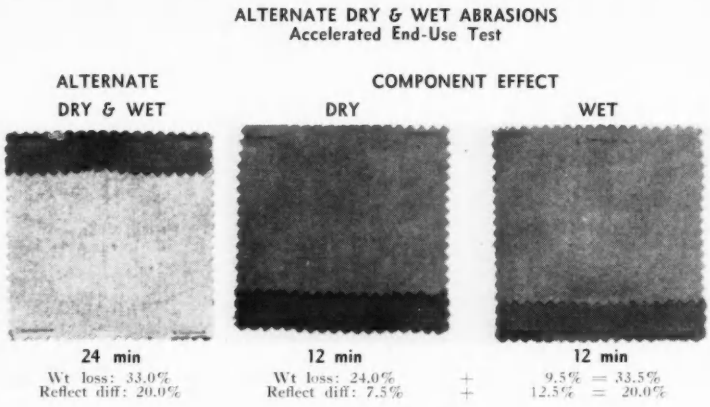


Figure 21
Alternate dry and wet abrasion. Three-minute dry tests were alternated with three-minute wet tests for four cycles to produce the result shown at the left.

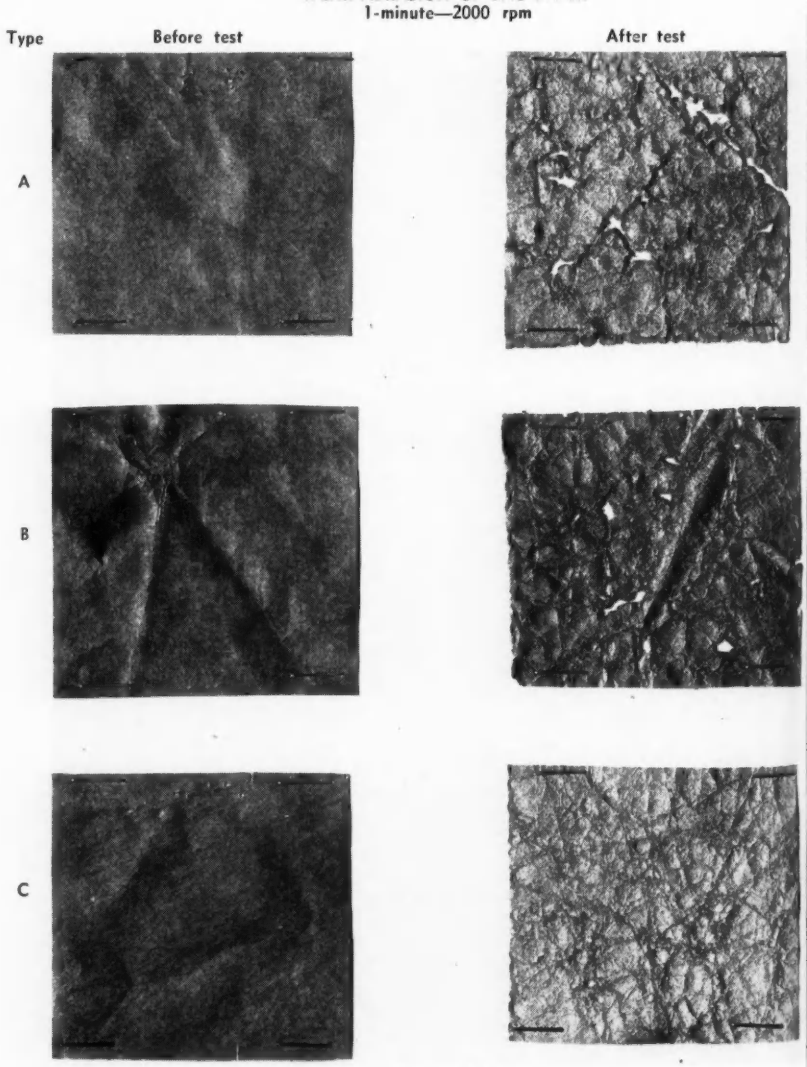


Figure 23
Evaluation of paper products.

Original | 5 Commercial drycleanings | 30 Secs in Accelerotor

Figure 22

The effect of 5 commercial drycleanings approximated by 30-second test in Accelerator on flock print.

abrasion resistance, flexing, wrinkling and development of pin holes. Several grades of bag paper are illustrated after testing for a short time in the Accelerotor.

NONWOVEN FABRICS ——— These fabrics are shown after test in Figure 24. There appears to be good possibility for using the instrument in this field.

LEATHER———Experiments have been made in the Accelerotor on dyeing, scuffing, penetration of pigments, fat liquors, etc. Intensive work has not been carried out.

GLASS———Glass fiber fabrics and finishes for them have been very satisfactorily tested in the Accelerotor in connection with industrial development of glass fabrics.

DIMENSIONAL CHANGES OF FABRICS———In addition to changes produced on fabrics of various fibers, wool felting shrinkage is shown in Figure 6. This felting takes place in water alone or in soap solutions and confirms, by means of a laboratory test of a few seconds, how increase of soap concentration beyond optimum actually reduces felting. The Accelerotor is in use to demonstrate shrink resistant treatments of wool.

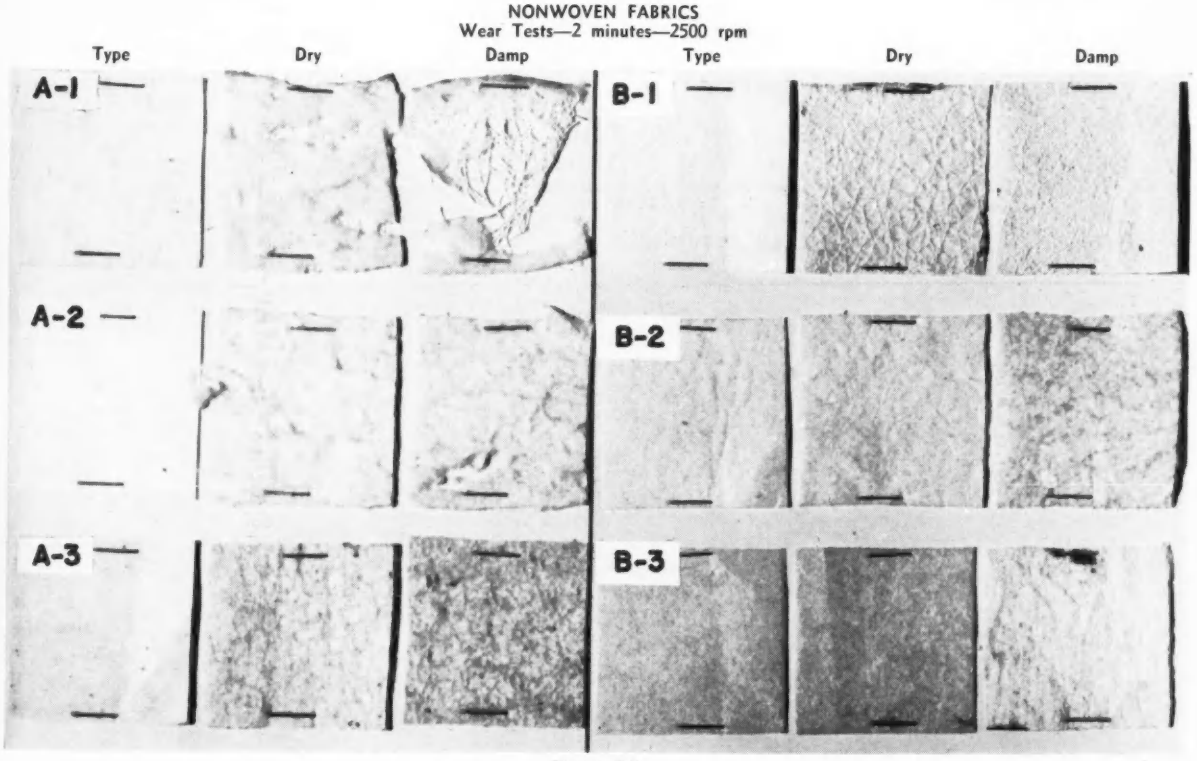


Figure 24
Evaluation of nonwoven fabrics

Figure 25
Army chino pants were worn for outdoor and indoor work over a period of two years. Note the wear characteristics of the naturally worn trousers and the duplication of this wear pattern by the Accelerotor, as shown by the back-lighted areas at knee and edge-wear of the cuffs.

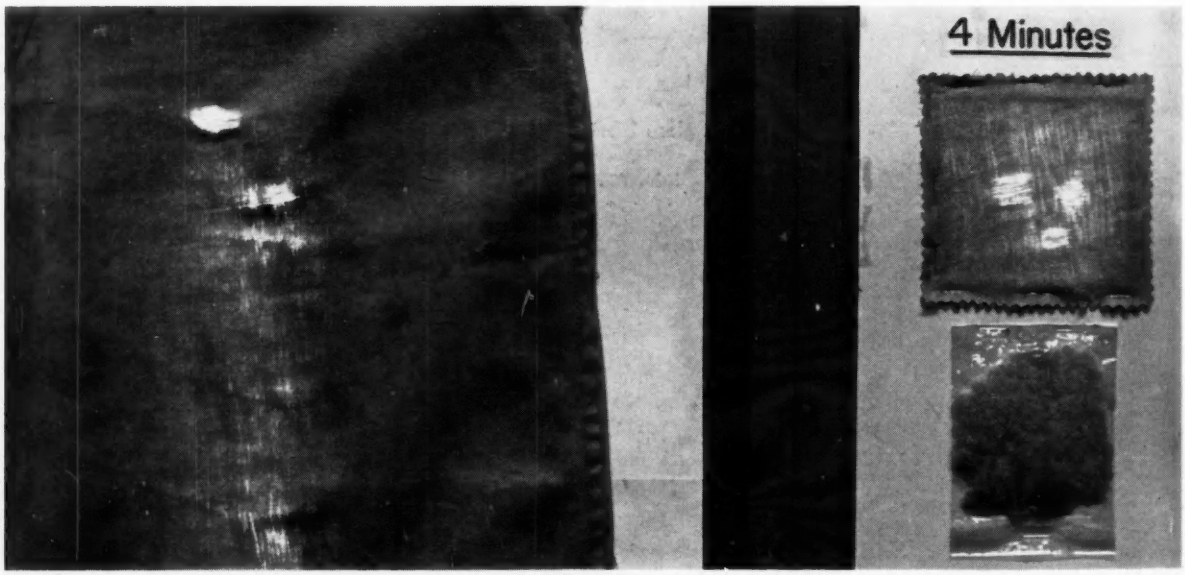
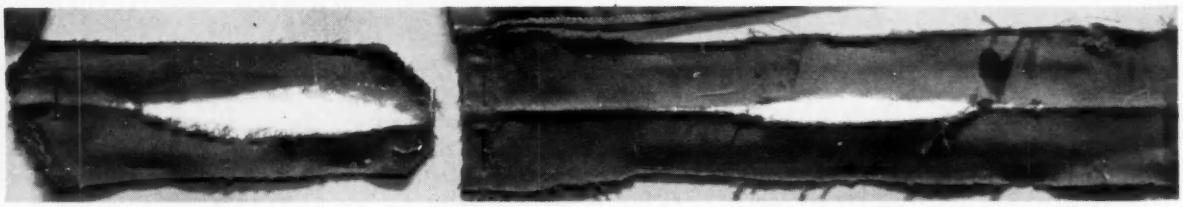


Figure 26
Close-up of the worn areas shows how a 4-minute test in the Accelerotor duplicates the character and severity of wear on leg and knee areas. Cellophane bag (below test specimen) contains detritus for study under the microscope.



Accelerotor edge-wear Natural cuff wear

Figure 27
Accelerator edge-wear test duplicates natural cuff wear.

Figure 28
Three-minute edge-wear test duplicates natural shirt collar wear.

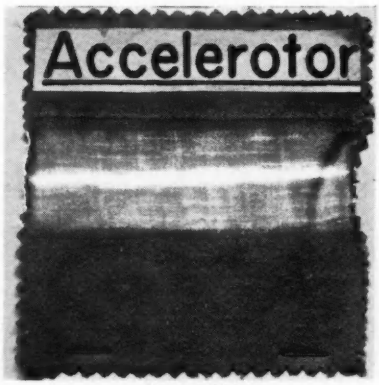


Figure 29A
Close-up of top of Figure 28.

Figure 29B
Close-up of center of Figure 28.

CONCLUSION

It is hoped and expected that with increasing industrial and research uses of the Accelerotor, categories of fabrics, garment types, end-use requirements, etc. will be established, with corresponding test methods developed which will be best suited for particular evaluations; e.g., widely divergent fabrics should not be compared against each other. An extreme of this would be the comparison of overcoating material with cotton shirting fabric. Certain grades of cotton sheeting could be comparatively tested or certain classes and weights of men's or women's wear woolen or mixed fiber fabrics could

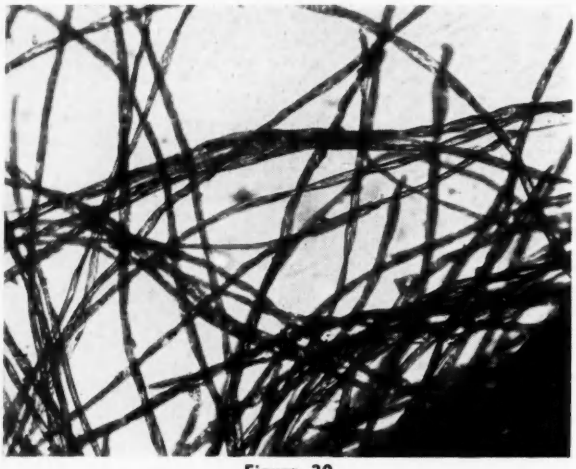


Figure 30
Filling fibers. Taken from worn area of chino pants (cf Figure 25).

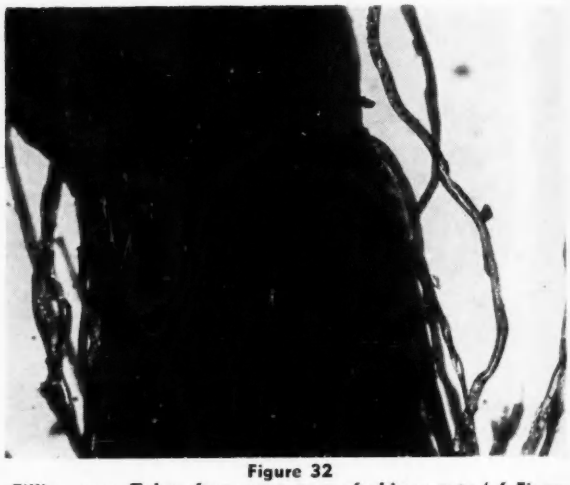


Figure 32
Filling yarn. Taken from worn area of chino pants (cf Figure 25). Note that filling yarn is almost intact because it was protected by warp yarns.

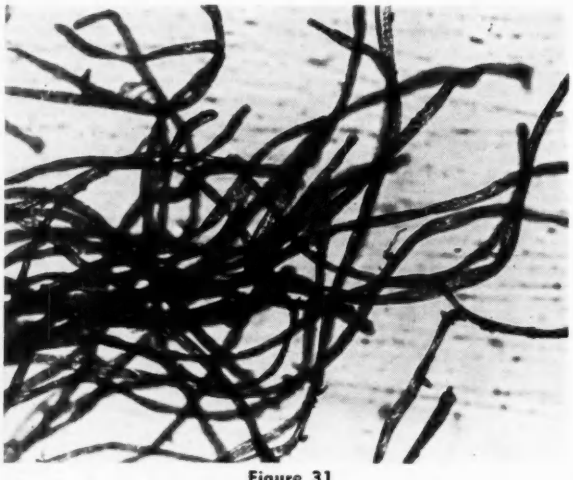


Figure 31
Warp fibers. Taken from worn area of chino pants (cf Figure 25).

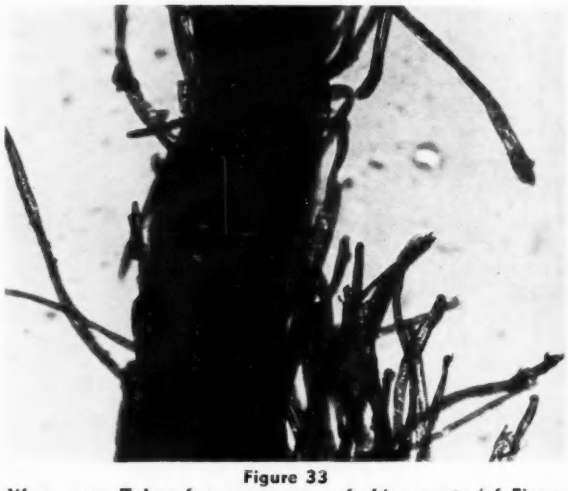


Figure 33
Warp yarn. Taken from worn area of chino pants (cf Figure 25). Note severe rupture of the yarn.

be tested by applicable test procedures. Children's play or snow suit fabrics would require different test procedures than men's shirtings. Some cases would require frictional (no grit) treatment. Others would require grit abrasion of suitable degrees of fineness. Water repellent cotton fabrics would no doubt require alternate dry wear and wash cycles to best predict end-use results.

There are many possible research applications for the Accelerotor. For instance, in the development of new fibers or study of natural fibers much has been learned about fiber characteristics by microscopical examination of fibers and detritus after the many kinds of mechanical action which can be produced in the instrument have been applied. Fiber fracture, wear, fibril formation, splitting, surface characteristics, etc., may be interpreted. Another example of interest is the damage to wool fibers by mechanical action in the Accelerotor. It is known that damaged wool fibers may absorb dye preferentially. A white wool fabric was given a short dry abrasion treatment in the instrument and then dyed with an original companion piece in the same dye bath. The damaged wool fibers dyed deeper than the control piece.

Appreciation is expressed to the AATCC Committee on Abrasion Resistance of Fabrics membership, former chairman Mr Max Winkler, present chairman Dr Theodore Cooke, for interest and cooperation in interlaboratory tests and tests and work on developing test methods now underway; to Mr Leonard Little, former chairman and Mr Charles Dorn, present chairman of the Executive Committee on Research and Mr Charles Sylvester, chairman of the Technical Committee on Research, for authorizing and organizing a much needed committee on abrasion to implement the development of the Accelerotor; also to the Atlas Electric Devices Co. for engineering the instrument and cooperation in development of accessories; to the most helpful interest of Mr Charles Simon and his ASTM abrasion group; and to the fine cooperation and encouragement of many of the users of sixty four instruments now in service.

Minutes—

TWO HUNDRED AND SECOND MEETING OF THE COUNCIL

THE Council held its 202nd meeting in the Hotel Statler, New York, NY, on Friday morning, June 15, 1956. Present were President Raymond W Jacoby, presiding; Walter M Scott and Frederick V Traut, vice presidents; Albert E Sampson, treasurer; Charles W Dorn, chairman of the Executive Committee on Research; William D Appel, J Robert Bonnar, Carl Z Draves, Henry F Herrmann and P J Wood, past presidents; George O Linberg, John P Ploubides and Robert D Robinson representing Northern New England; Francis H Casey, Ernest J Chornyei and Raymond B Taylorson representing Rhode Island; Raymond J Carey representing Western New England; Matthew J Babey, William F Brommelsiek, Percy J Fynn, John H Hennessey, Patrick J Kennedy, Paul J Luck and Donald E Marnon representing New York; Bernard K Easton representing Niagara Frontier; Clarence A Seibert and Jackson A Woodruff representing Philadelphia; A Henry Gaede, Clarence Hooper, Harley Y Jennings, Warren E Rixon and Raphael E Rupp representing Piedmont; John C Cook representing Southeast; Joseph D Mosheim representing South Central; Hubert A DesMarais representing Pacific Northwest; Sidney M Edelstein of the Archives Committee with Robert A Shiff as guest; William A Holst of the Committee on Constitution and Bylaws; Charles A Sylvester of the Technical Committee on Research; John Wallace, chairman of the Niagara Frontier Section; Charles A Whitehead of the *American Dyestuff Reporter;* and Harold C Chapin and Richard R Frey of the secretary's office.

The secretary's financial report of May 22d, and the treasurer's report of June 5th, were accepted. Mr Wood protested that, in the assistant secretary's report of the 201st Council meeting, his arguments against the new office of executive secretary had not been covered to the extent of arguments for the office. It was voted that the report be sent back for revision and resubmission at the September Council meeting.

The secretary reported adoption, by letter ballot, of the Bylaw amendment which would permit the Council to appoint to the Committee on Constitution and Bylaws any Senior member of the Association; thus replacing the secretary ex officio.

For the Appropriations Committee, Mr Sampson requested additions to the current budget which were approved as follows:—

Crock cloth for resale	$ 33.80
Light Fastness Standards	4000.00
Accelerotor, legal bills on patent	1500.00
Standard grease wool for resale	500.00
Yarn for resale in knitted tubing	110.00

The $211,035 budget for year beginning August 1, 1956 was approved as presented. For future accounting the treasurer presented a proposal, prepared by the auditor at his request, for an accrual basis to replace the present cash basis. Comparative figures for the current fiscal year according to both systems would be given the Council for consideration at its September meeting. On motion of the treasurer, the Appropriations Committee was instructed by the Council to take such steps for our fund protection as unusual conditions may warrant, and report same at the next following Council meeting. It was explained that this might mean not only buying or selling of securities, but perhaps also the engaging of advisory service. In consideration of current plans for the reorganization of Association management, Mr Sampson presented the resignation of himself as treasurer, and of Mr Manchester as assistant treasurer, to be effective at such date as the Council may decree. This would involve also his office as chairman of the Appropriations Committee, held ex officio. Thanks were voted to the treasurer and secretary for their services.

For the Organization Committee, Mr Herrmann reported the opinion of a lawyer that the Constitution does not prohibit the election of the same person to the offices of secretary and treasurer. The motion for making appointment to the new office was nevertheless amended to make this executive secretary and assistant treasurer. For this office Mr Herrmann reported selection of George P Paine, director of public relations and assistant secretary of the American Standards Association. Mr Paine was then nominated by the president, at salary of $15,000, and was elected without dissenting vote. He was later introduced by Mr Dorn, and spoke briefly.

For the Committee on Inter-Society Relations, Dr Draves recommended the following list of representations to other organizations, which was approved:

COMMITTEES OF AMERICAN STANDARDS ASSOCIATION

L-14—Textile Test Methods

Representatives with voting power

SECRETARY'S FINANCIAL REPORT—MAY 22, 1956

	Applications	Dues, regular & reinstate	Dues, Corporate & Sustaining	Miscellaneous	Totals
Received & transmitted to treasurer, August 1, 1955 to March 19, 1956	4262.50	61441.50	56200.00	15020.69	136924.69
March 19 to May 22, 1956	676.50	606.00	5085.00	3184.25*	9551.75
Total in fiscal year to May 22	4939.00	62047.50	61285.00	18204.94	146476.44
Leaving deposited by treasurer with secretary					8828.56
For comparison, receipts to May 20, 1955	4389.00	61402.00	47722.50	15969.93	129483.43

Miscellaneous items,	*
Reporters & reprints	14.60
Year Books	413.40
Crockmeters	677.26
Crock cloth commissions	200.59
Multifiber cloth commissions	856.44
Moth cloth commissions	91.25
Water test apparatus	28.00
Dyed standards	94.00
Knitted tubing	62.40
Gas fading units	25.00
Buttons	7.25
Color transfer charts	192.50
Flammability apparatus	40.00
Application of Vat Dyes	226.00
Cotton skeins	22.31
Standard grease wool	5.00
Grey scales	72.00
Accelerotor liners	156.25
	3184.25

on methods: C W Dorn and C A Sylvester

Alternate: H W Stiegler

L-22—Minimum End-Use Standards for all Textiles

Representatives with voting power on methods and advisory power on standards: C W Dorn and C A Sylvester

L-23—U S Committee for ISO/TC 38 on Textiles

Representatives with voting power: J R Bonnar and L S Little

Alternates: C W Dorn and C A Sylvester

L-24—Institutional Textiles, Minimum End-Use Standards for Hotels, Hospitals, Etc:

Representatives with voting power on test methods and only advisory power on standards: H W Stiegler and J Labarthe, Jr

Consumer Goods Standards Board

Representatives with voting power on test methods but only advisory with respect to standards: C W Dorn and C A Sylvester

Alternates: R C Allison and H W Stiegler

Conference of Executives of Organization Members

Representative with voting power: G P Paine

Alternate: H W Stiegler

COMMITTEE OF AMERICAN SOCIETY FOR TESTING MATERIALS

Joint ASTM-AATCC Committee on Textile Testing

Representatives with voting power: C W Dorn, C A Sylvester, L S Little, and H W Stiegler

REPRESENTATION TO INTER-SOCIETY COLOR COUNCIL

Representatives with voting power: F J O'Neil, chairman, W D Appel, and R E Derby, Jr

OFFICE OF TECHNICAL SERVICES—U S DEPARTMENT OF COMMERCE

Standing Committee for Commercial Standards

CS59-44 for Textiles

Testing and reporting

Representative with voting power: H W Stiegler

Standing Committee for Commercial Standards CS191-53 for the flammability of clothing textiles:

Representatives with voting power on test method and apparatus and only advisory power on standards for safe fabrics: H E Hager

For the Executive Committee on Research, Mr Dorn reported as follows:

1) The National Fire Protection Association has criticized the AATCC Flammability Test on the basis that it does not give the rate of burning. The motion was approved to write a history of our test method clearly defining its scope and limitations. The article will be carefully reviewed by ECR before publication in the ADR.

2) The proposed $65,000 research budget for 1956 was approved.

3) Albert Johnson reported that our Corporate Membership to date consisted of 331 members who had contributed a total of approximately $62,000 to our research fund.

4) W R Thompson, manager, Radiant Heat Division, Edwin L Wiegand Co, submitted a proposal to AATCC whereby his company would contribute $50,000 toward a cooperative program of research to evaluate the places in which radiant heat could help the finishing industry in the following aspects:

a) Resin finishing
b) Heat setting
c) Prevention of migration
d) Booster heating before conventional drying range.

The monetary contributions would be contingent on his company approving a program to be spelled out by AATCC.

It was pointed out to Mr Thompson that AATCC research funds could not be used to benefit any one segment of the textile industry and that any program involved could not be restricted to radiant heaters of their manufacture, but would have to include those of competitive manufacture also. This was agreeable to Mr Thompson, and Edward Lawrence was authorized to form a committee to investigate the possibilities of such a study.

5) William Appel reported on the recent ISO cotton meetings held in England. Although several items of interest to the AATCC were on the agenda, they were in the processing stage and did not merit discussion at the ECR meeting.

Leonard Little, chairman for colorfastness, reported that the ISO meetings on this subject would be held in New York, September 5, 6, and 7th, with the afternoon of the seventh devoted to shrinkage in laundering.

6) A comprehensive report submitted by the National Research Advisory Committee was reviewed. The report listed 71 suggestions for research and statements of critical technical processing problems.

7) Approval was voted for TCR to:

a) Make Ernest Chornyei a member of the committee
b) Change the status of the Committee on Analysis of Fiber Mixtures from active to that of reference committee
c) Change the status of tentative test methods to that of standard test methods by vote at TCR meetings.
d) Appoint Joseph Norton chairman of the Lightfastness Committee, succeeding R C Allison.
e) Appoint Harold Wolf chairman of the newly authorized Committee to Evaluate Fulling Agents.

8) The AATCC Research Laboratory at Lowell is currently working on projects for the following committees: Washfastness, Lightfastness, Dimensional Stability, and Abrasion.

Approval was voted for Lowell to purchase an electric calculating machine at a cost not to exceed $600.00.

The Lightfastness Committee was authorized to spend approximately $60.00 for the purchase of gray Munsell sheets to augment the color differences shown on the International Geometric Gray Scale.

For Mr Johnson of the Corporate Membership Committee, Mr Frey presented a report for fiscal year to date, showing in comparison with last year a gain of 46 new Corporate Members with contributions of $8,100, and a loss of 26 members formerly paying $2,435.

Mr Linberg reported that registration material for the Perkin Centennial was about to be mailed. An invitation from the Niagara Frontier Section for a covention in 1961 was under consideration.

It was announced that the Olney Medal would be awarded to Walter J Hamburger. On the Committee of Award for next year Mr Lawrence will replace Dr Jennings.

For the Subject and Speakers Bureau, Mr Babey reported a file of forty-eight subjects for presentation at meetings, and requested that Section program chairmen send him their addresses for receipt of new listings.

Reporting for the Southern Region, Dr Scott described a recent meeting of the Washington Section at which those present were divided into two panels, each of which proposed questions for the other to answer. A judge decided which side contributed more to the discussion. Mr Traut reported on a meeting of the Niagara Frontier Section and a Ladies Night of the Philadelphia Section.

Mr Edelstein reported for the Archives Committee, stating that by

September there would be available in Lowell a room air conditioned and humidified for keeping old documents and books. He introduced Robert A Shiff, president of the National Records Management Council, who described the growing interest of business organizations in preservation of records and suggested how the Association might perform this service not only for itself but for related industry.

For Mr Doyle of the Publicity Committee, Mr Whitehead described results from a clipping service, further plans for Perkin Centennial publicity and a manual on publicity under preparation for use of local sections.

Mr Hooper reported for Prof Rutherford of the Committee on Textile Education. Since the April Council meeting attempts had been made to organize a meeting of executives in textile and allied industries, but no place or date had been settled. The plan for interesting students in textiles has been quoted in the *Daily News Record*, also printed in full in May issue of the *Textile Bulletin* and June issue of *Textile Industries*. A full page advertisement of the North Carolina State College School of Textiles in the Sunday issue of a Charlotte newspaper had brought but eleven replies from prospective students. It drew also a letter from a happily employed graduate to effect that conditions of employment for graduate chemists generally in the industry might be improved. Prof Rutherford urged publication by the Association of a brochure on the industry to attract students.

For the Committee on Publications, Dr Scott described effort to raise the scientific standard of papers through advertising of requirements in the *Reporter*. There would be regular publication in the *Reporter* of lists of papers in process of editing and printing.

Mr Sampson reported information, received by Mr Appel in England, that the first volume of the *Colour Index* would be out by December, the second then or soon thereafter, and the other two early in 1957. It was voted that a reply card for request of information on the *Colour Index* be included in the Perkin Centennial mailing.

The next Council meeting will be held in connection with the Perkin Centennial on Wednesday, September 12, at 7:45 PM. It was voted that the meetings of November 16, 1956 and January 18, 1957 be in New York; and that there be meetings on March 29 in Roanoke, Virginia, and on June 7 in New York.

Presented by Dr Scott for the Committee on Membership and Local Sections, the following were elected to the classifications indicated:

CORPORATE

General Electric Co, Silicone Production Dept
General Electric Co, Home Laundry Dept
Queen Print Works, Inc
Union Carbide and Carbon Corp, Silicones Div

SENIOR

Adams, J R
Andrea, M
Armenante, A A
Armenante, G A
Best, F
Boshart, W J
Deese, R F
Dunne, T F
Flynn, T F
Folgueira, F P
Frenkiel, M M
Gales, A H
Head, E L
Hill, B G
Kater, H F
Lobb, R S
Murray, J H
Myles, W J
Naughton, J M
Neal, R S
Paine, G P
Perry, R B
Rigley, G W
Schoeneberg, W A
Shulman, M
Stanley, G
Stone, A L
Van Tassel, R B
Worth, J G

JUNIOR

Graham, C J
Pink, A E

ASSOCIATE

Flubacher, M A
Fried, L R
Hunter, B F
Reynolds, E H
Smith, G O

STUDENT

Lazzo, N M
Peak, J D
Zau, T

TRANSFERS TO SENIOR

Barnard, W S
Carter, T
Mahoney, H F

Respectfully submitted
H C CHAPIN
Secretary

Membership Applications———

(*Concluded from page P678*)

SC. Sponsors: R M Jones, M R Pickler.

Ralph C Hand—Section head, Text Sect, The Dow Chemical Co, Coatings Technical Service, Midland, Mich. Sponsors: M C Carpenter, C M Alberto.

Andrew J Hawkins, Jr—Assistant mgr, West Coast District, E I du Pont de Nemours & Co, Inc, Los Angeles 58, Calif. Sponsors: F H Ahl, Jr, J R Nehmens.

Robert S Kenyon—Dyer, Crompton Shenandoah Co, Plant #3, Waynesboro, Va. Sponsors: H Kinder, D W Snyder.

John P Leach—Production manager & technical director, Permachem Corp, West Palm Beach, Fla. Sponsors: C Schlatter, B N Baer.

Willard L Sharp—Sales & sales service, Hilton Davis Chem Co, Cincinnati 13, O. Sponsors: D S Hirtle, A S Davis.

Henry St Laurent—Dyer, Sterling Pile Fab & Watuppa Finishing, Fall River, Mass. Sponsor: E J Chornyei, F K Goerner.

Cliff K Stansell—Dyer, Pepperell Manufacturing Co, Lindale, Ga. Sponsors: R B VanTassel, R Champion, Jr.

Harold Wilson—Tech sales manager, Emulsion Printing Ltd, Manchester 15, England. Sponsors: J R Bonnar, L Auer.

JUNIOR

Richard B Gunter—Chemist, Brookneal Mills, Brookneal, Va. Sponsors: A C Quance, F A Prisley.

ASSOCIATE

Philip R Gelzer—Trainee (technical & adm), Geigy Dyestuffs, Div of Geigy Chemical Corp, New York 8, NY.

Frederic W Howe, Jr—President, Crompton & Knowles Corp, Worcester, Mass.

John B Malloy—Resident mgr, Frank P Bennett & Co, Inc, New York, NY.

Wade H Rhyne—Sales engr, The Foxboro Co, Chattanooga, Tenn.

Donald J Voss—Sales repr, Westvaco Chlor-Alkali Div of FMC, New York 17, NY.

APPLICATION FOR TRANSFER TO SENIOR MEMBERSHIP

Joseph S Birch
Eric A Schlaginhaufen
Paul R Tully
James W Whitworth

SUPPLEMENT

Minutes of the 201st Meeting of the Council

THE following material supplements the minutes of the 201st meeting of the Council, which were published in the August 13th issue.

Presented by Joseph H Jones for the Membership and Local Sections Committee, the following were elected to membership April 20, 1956:

CORPORATE

Boris Kroll Fabrics, Inc
Cabin Crafts, Inc
Chemstrand Corp
Frankford Woolen Mills, Inc
A & M Karagheusian, Inc
Moretex Chemical Products, Inc
Pyramid Manufacturing Co, Inc
Virginia Mills, Inc

SENIOR

J C Addabbo
T Anderson, Jr
E Baer
W E Baldwin
G Barker
I Berge
R J Breazeale
N Brenner
T S Brooks
R G Brown
W T Buchan
P G Carlson, Jr
A F Chadwick
D H Cool
J A Creech
A E Delatri
W C Devine
J R Fallon
J J Fantry
W G Filmyer
W J Fulkerson
M C Furlong
H A Goforth
S F Goodheart
A Greenfield
J H Groff
D L Haislip
J J Handy
P J Hannan
S J Haws
N L Horner
J F Hughes
W W Humecky
J F Hunt
Y Kariya
J R Kendrick
J Kimura
J C Lawler
R J LeBrun
A A Levin
I I Lihn
E G Litton
R J Luciano
E C Martin
F Masterson
R McArthur
R W Miller
A C Milnes
F X Minich
E G Mullen
H N Myers
J R Myles
D A Nevels
W B Newman
A Nockowski
J J O'Connor, Jr
D J Ott
O Pelleccione
A Permut
C N Pitts
J T Poplin, Jr
A V Porta
J V Quinn
H F Rhoades, Jr
M R Richardson
F K Ross
R M Roumain
N Sachs
A E Schaefer
A R Schoepflin
C D Sickerott
F W Smith
C E Snook
N M Somma
C H Southwick
H Stenlund
J F Stroup, Jr
W E Stubbins
E S Swain
R P Thomas
R Thornton
L A Trimble
W J Trimble, Sr
L F Vossel
L Zanchi

JUNIOR

D R Cannon
T Furth
L L Gregoire
R L McGowan
F W Neubrech
J Suarez
N A Young

ASSOCIATE

J H Adams
W G Atkins
P E L Bruck
N H Buschman
R Elmendorf
E P Hersey
M Hunt
J J Jenkins
W H Kuch
H Y Kwon
R B Loomis
H M Martinez
M T Naon
O L Dott
J R Park
S Rader
H Ramsdell
S F Rinaldi
A Robinson
A Sala
C N Scheinberg
A B Shaw
A L Stallkamp
C J Stroemple
R R Zoccolillo

STUDENT

W B Astle, Jr
M D Barber
M P Brown
J D Carr
H W Eastwood
G K Empting
C W Funderburk
W J Garrett
D M Hall
G W Heard
W P Ironside
C B Lacy
R A McDaniel
L F McGoff, Jr
J M Pasquill
J A Power
R L Richard
R K Rushin
J W Sherrer
J R Spivey
A Szczur, Jr
B R Tavares
G C Temple
C E Willett
C H Wilson
J C Yow, Jr

TRANSFERRED FROM OTHER CLASSIFICATIONS TO SENIOR

C M Alberto
J C Bell, Jr
W T Brown
H J Demas
D C Dohner
L R Greenwood
F M Hinds
A M Hoffman
F J Murphy
J G Signorino

SECRETARY'S FINANCIAL REPORT—MARCH 19, 1956

	Applications	Dues, regular & reinstate	Dues, Corporate & Sustaining	Miscellaneous	Totals
Received & transmitted to treasurer, August 1 to December 16, 1955	2278.00	48276.50	13305.00	7465.29	71324.79
December 16, 1955 to March 19, 1956	1984.50	13165.00	42895.00	7555.40*	65599.90
Total received & transmitted to March 19	4262.50	61441.50	56200.00	15020.69	136924.69
Leaving deposited by treasurer with secretary					9034.32
For comparison, receipts to Mar 18, 1955	3648.50	60303.50	45107.50	13333.01	122392.51

* Miscellaneous items,

Reimbursement, 1955 Convention expense	3500.00
Reporters & reprints	30.60
Year Books	909.05
Crockmeters	681.32
Multifiber cloth, commissions	733.18
Crock cloth, commissions	222.35
Moth cloth, commissions	78.75
Water test apparatus	149.70
Dyed standards	54.00
Knitted tubing	58.60
Gas fading units	16.00
Buttons	16.75
Color transfer charts	120.00
Flammability apparatus	22.00
Application of Vat Dyes	621.00
Cotton skeins, commissions	18.10
Standard grease wool	16.00
Accelerotor royalties	50.00
Accelerotor liners	17.50
Chemical resold	1.00
Grey scales	78.00
Launderometer royalties	161.50
	7555.40

NOTICE

To Authors and Section Officials

Under a ruling of the Publications Committee, all papers presented before local sections of AATCC must be submitted direct to the publishers of the AMERICAN DYESTUFF REPORTER, 44 East 23rd St, New York 10, N Y. Two copies of each manuscript should be submitted in accordance with the "Notice to Authors," which appears periodically in the Proceedings.

Activities of the Local Sections

South Central

(E A Schlirf)

THE South Central Section held its annual summer outing at the Lookout Mountain Hotel, Chattanooga, Tenn, June 22-23, with 204 members and guests present. Included in the two-day program were a buffet dinner, bingo party, and a dance on Friday night. On Saturday, the ladies were entertained with a luncheon and card party, while the men enjoyed golf, horseshoe pitching, and flycasting tournaments. This full day of activity was followed by a banquet, presentation of prizes, and a dance.

Winners in the golf tournament were Dan Rion of Nopco Chemical Co, who turned in low gross score for suppliers, followed by Fletcher Kibbler of Morningside Chemical Co, who took low net honors. Second place low net honors for the suppliers was a three way tie among Bob Shaw, Bishop Smith, and Tom Ratajczak. For the millmen, low gross honors went to Dick Thomas of Roxbury Southern Mills who won the Mac Chemical Company Trophy. Low net honors went to Harvey De Lay of Standard-Coosa-Thatcher Co. Second place low net was turned in by Jack Welborn of Reigel Textile Corp. The Sportmanship Award was won by Bill Pearson of Hilton Davis Chemical Co, while Max Ferguson, National Aniline Div, was closest to the pin.

In other sports activities, Norman Price of American Aniline Products, Inc, took first place in the horseshoe pitching singles. Bill Fayssoux of Royce Chemical Co and Fred Price of Sweetwater Hosiery Mills won the doubles honors in horseshoe pitching. The flycasting contest was won by Gordon Wallace of E F Drew & Co, Inc.

The next meeting of the South Central Section is scheduled for December 1, 1956 at the Hotel Patten in Chattanooga.

(See photos on page P706)

Philadelphia

(T R Scanlan, Jr)

THE September meeting of the Philadelphia Section, which will be held in Reading, Pa, has had two important additions to its program.

The Carpenter Steel Co of Reading will welcome 50 members of AATCC on a first-come, first-served basis for a tour of their plant, from 3:30 to 4:30 PM on Friday, September 28th. The tour will include a visit to the hot rolling mill, hammer shop and rolling mill, and the cold rolling of stainless steel. Ample parking is available at the Carpenter Steel Co, located at Front & Bern Streets in Reading.

A second addition is a picnic at the estate of Dr Scott Althouse in Bernville, Pa, from 11:30 AM to 4:00 PM, Saturday, September 29th.

The business and technical meeting will be held Friday evening, September 28th, at 6:30 PM in the Abraham Lincoln Hotel, Reading, Pa.

Western New England

(A W Goodwin)

THE ninth annual outing of the Western New England Section was held at the Wallingford County Club, Wallingford, Conn, on June 15, 1956. Approximately 75 members and guests were present.

Door prizes were awarded to everyone in addition to the awards for winners of the various golfing events.

Dinner featured a choice of steak or lobster.

Southeastern

(J C Cook)

OVER 250 members, guests and wives attended the 1956 outing of the Southeastern Section at Radium Springs, Ga. Invaders from the Piedmont Section, fugitives from their own outing, ran away with golf prizes to an extent that a ruling barring Carolina Yankees in the future is being considered.

Wm Kennady, Arnold, Hoffman & Co, Inc was in charge of the meeting with George Caron, A & M Karagheusian, Inc, assisting. Roy Hargrove, Carbic-Moss, Inc, was in charge of golf. Curt Mueller, Bibb Mfg Co, was chairman of the Finance Committee. Other chairmen included: prizes—Neb Johnston, Geigy Chemical Co; entertainment—James Hall, F H Ross & Co; registration—Carl Blumenstein, Seydel - Woolley Co, women's entertainment—Robert Hallowell, Coats & Clark; photographs—Claude Suttle, Southern States Chemical Co.

WINNERS OF GOLF TOURNEY

Millmen

Low Gross—Hugh Brown, Pepperell Mfg Co

Low net—Roscoe Whitney, Coats & Clark

Blind Bogie—Louis Burkes

Suppliers

Low Gross—Jack Crist, Jr, Southern Dyestuff Corp

Low Net—Gould Bernard, Carbide & Carbon Chem Co and Ed Murphy, Proctor Chemical Co

Blind Bogie—Sam Hayes, Ciba Co, Inc

WINNERS, HORSEHOE PITCHING

Singles

W W Harris, International Salt Co

Doubles

Elwood Barbre, Pepperell Mfg Co

Roy Smart, Olin Mathieson Chemical Co

(See photos on pages P707-8)

SOUTH CENTRAL SECTION OUTING

June 22-23, 1956 • Lookout Mountain Hotel, Chattanooga, Tenn.

(See page P705)

SOUTH CENTRAL SECTION OFFICIALS—(Standing, l to r): Joseph D Mosheim (Councilor), Crystal Springs Bleachery; Lloyd R Greenwood (Outing Chairman), Southern Dyestuff Co; Ernest V Helms (secretary), Geigy Dyestuffs; William F Luther (chairman), Lumar Corp; J C Whitt (vice chairman), Standard-Coosa-Thatcher Co; Frank E Cater (treasurer), Ray-Ser Dyeing Co. Seated (l to r): Mrs Mosheim, Mrs Greenwood, Mrs Helms, Mrs Luther, Mrs Whitt, and Mrs Cater.

GOLF WINNERS—(L to r): Fletcher Kibbler, low net, suppliers; Dick Thomas, low gross, millmen; Jack Welborn, second low net, millmen; Bill Pearson, sportsmanship; Max Ferguson, closest to the pin.

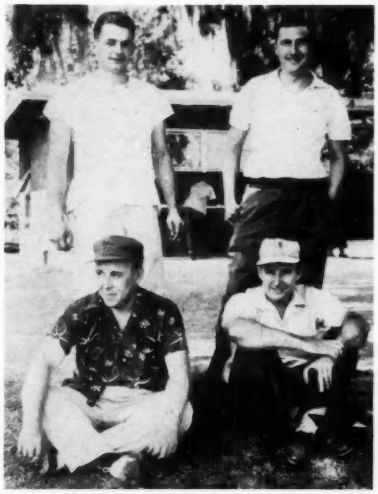
HORSESHOE PITCHING AND FLYCASTING WINNERS: Norman Price, singles, horseshoes; Bill Fayssoux, doubles, horseshoes; Gordon Wallace, flycasting.

SOUTHEASTERN SECTION OUTING

June 8-9, 1956 • Radium Springs, Ga.

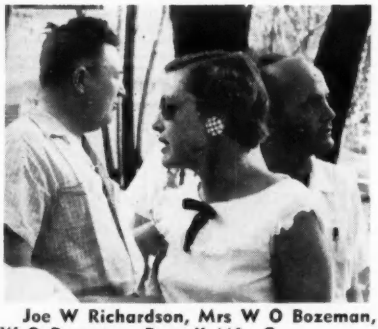
(See page P705)

THE LONG AND SHORT OF IT—R P Van Tassel, Pepperell Mfg Co, and Mrs J M Buckner

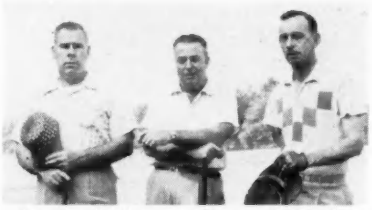


Standing: George Caron, A & M Karagheusian, Inc; Ted Burgess, Emery Industries
Seated: T F Gifford, Ten-Tex Corp; James Hall, F H Ross Co

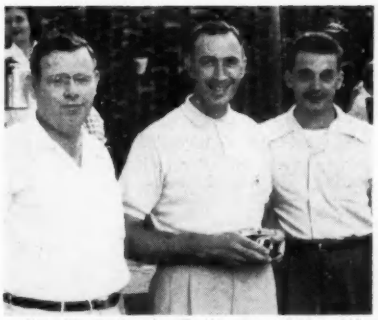
SONGBIRD—T Howard McCamy, Seydel-Woolley Co



Joe W Richardson, Mrs W O Bozeman, W O Bozeman, Russell Mfg Co



Frank X Nerney, Becco Sales Corp; Pete Slaughter, Callaway Mills; Ken E Miller, Augusta Chem Co



"Red" Pollard, Callaway Mills; Wm Kennady, Arnold, Hoffman & Co, Inc, outing chairman; George Caron, A & M Karagheusian, Inc, assistant outing chairman

A F Garrison and Joe Federal, General Dyestuff Co; Riley Jones, Dundee Mills

Mr & Mrs A Kempton Haynes, Rohm & Haas Co; Pete Slaughter, Callaway Mills

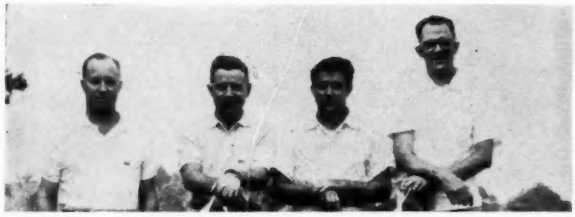
Tom Holland, American Cyanamid Co; Roscoe Whitney, Coats & Clark, Inc; Wm Pearson, Hilton-Davis Chem Co

Elwood Barbre, Pepperell Mfg Co; Mrs Roger Gill

Geo W Spicer and R D Henry, Textile Aniline & Chem Co; Mrs Henry, Mrs Spicer

Elwood Barbe, Pepperell Mfg Co; Mrs Dick Jones; Louis Kirby, American Cyanamid Co; Dick Jones, Southern States Chemical Co

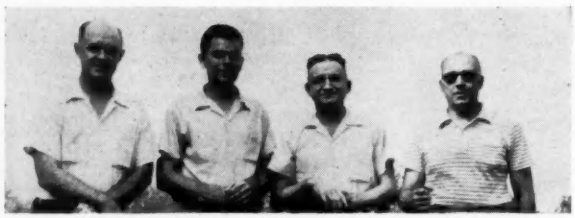
Curt Mueller, Bibb Mfg Co; H Gillespie Smith, American Cyanamid Co; Wm Fayssoux, Royce Chemical Co; W O Bozeman, Jr, Russell Mfg Co; James W Swiney, Fulton Bag & Cotton Mills



George Dozier and Jack Crist, Southern Dyestuff Corp; Hugh G Brown, Pepperell Mfg Co; Jim Stephenson, Canton Cotton Mills

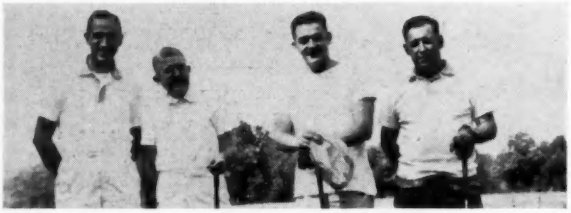
Roger Moister, Wyandotte Chemicals Corp; Robert Wurtz, Pennsylvania Salt Mfg Co; Warren Tiller, Tennessee Corp; James T Hall, F H Ross & Co

Sam Hayes, Ciba Co, Inc; R D Henry, Textile Aniline & Chem Co; Robert Horney, Ciba Co, Inc; Geo W Spicer, Textile Aniline & Chem Co



Nesbit Johnson, Geigy Dyestuffs; Frank Cooper, Jr, Dixie Belle Mills; L C Harmon, Jr, and A Kempton Haynes, Rohm & Haas Co

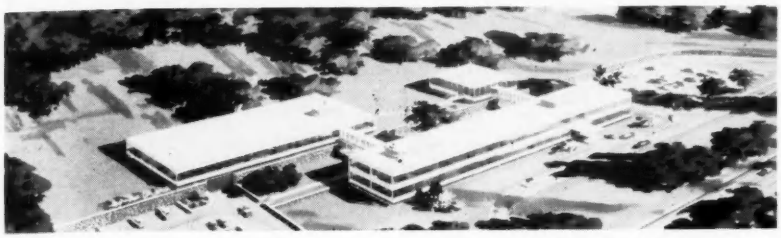
M Louis Kirby, American Cyanamid Co; Robert Hallowell, Coats & Clark, Inc; T Howard McCamy, Seydel-Woolley Co; H Gillespie Smith, American Cyanamid Co



Wm Kennady, Arnold, Hoffman & Co, Inc; Roger Dickinson, Coats & Clark, Inc; Geo Caron, A & M Karagheusian, Inc; Max Ferguson, National Aniline Div

Howard Smith, National Starch Products Co; Mrs Smith; Ed Estes, Stein Hall Co; Mrs Estes

News of the Trade



Artist's drawing of Geigy's new headquarters at Ardsley, NY

Geigy HQ Now at Ardsley, N Y

Geigy Chemical Corp has announced the moving of its headquarters from New York, NY, to Saw Mill River Road, Ardsley, NY. The Corporation's Agricultural Chemicals, Industrial Chemicals, and Pharmaceuticals Divisions opened for business in Ardsley the first week of August. The Dyestuffs Division, Coloristic and Chemical Research Laboratories will move to Ardsley this month.

Geigy is a subsidiary of the Swiss chemical firm, J R Geigy, SA. The parent company will celebrate its 200th anniversary in 1958.

Geigy's new headquarters include air-conditioned Administration and Cafeteria Buildings, as well as a Laboratory and Service Building, all of reinforced concrete with exteriors of insulated white porcelain enamel panels. Interior design is on a modular basis, with an eye to both functional needs and attractive working conditions. Administrative facilities have been planned so as to permit integration with application, research and development laboratories.

Geigy's new buildings at Ardsley were designed by the architectural firm of Skidmore, Owings & Merrill and constructed by Vermilya-Brown, Inc.

Construction of an additional laboratory for research in the pharmaceutical field will be commenced in the near future.

Carbide Moves New York Sales Office

Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation, has moved its New York district sales office to 100 East 42nd Street, New York 17. The telephone number has been changed to MUrray Hill 6-5100.

Color Association to Feature Jamestown Colors

In honor of next year's 350th anniversary of the first permanent English settlement in the New World, at Jamestown, Va, the Color Association of the United States, Inc, will issue a brochure, probably in late September, showing the Jamestown colors and authenticating them in relation to the historic setting. They will be offered to the whole field of design.

Estelle M Tennis, executive director of the Color Association, made the announcement following a recent trip to Jamestown.

Miss Tennis and Mary Burnley Gwathmey have been working on the idea of appropriate colors to salute the 1957 celebration since last spring. Miss Gwathmey is consultant for color and design in merchandising for the Virginia 350th Anniversary Commission, which has headquarters in nearby Williamsburg.

Lewis A McMurran, Jr, chairman of the Commission, was host to Miss Tennis.

Mona Erects New Power Plant

Mona Industries, Inc, Paterson, NJ, has erected and equipped a power plant to provide for a 400% increase of high pressure steam power for its manufacturing operations.

AAP to Build Sales Offices, Laboratories at Paterson

American Aniline Products, Inc, wholly-owned subsidiary of Koppers Company, Inc, announced last month that it will build a new metropolitan sales office, laboratory and warehouse at Paterson, NJ.

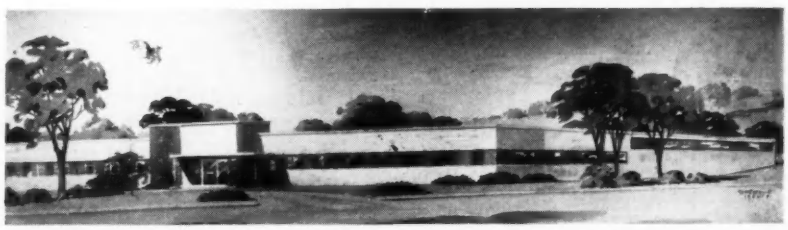
T C Keeling, Jr, vice president of American Aniline, said that arrangements have been made to occupy three acres of ground at Fourth Avenue and McLean Boulevard in Paterson on which will be erected a brick and concrete block, one-story building to contain approximately 50,000 square feet of floor space. Completion and occupation of the new building is expected in the spring of 1957.

When the structure is completed, American Aniline will move its sales, laboratory and warehouse operations from the building now occupied at University Place in New York. Mr Keeling said the new installation, located in the heart of the dyeing and finishing area of New Jersey, will be more convenient for American Aniline's customers and also will provide better trucking facilities.

When in full operation the new facilities will employ about 50 persons. Approximately 6,000 of the 50,000 square feet of floor space will be devoted to laboratory facilities for the testing of dyes and other chemicals.

Robert W Brewer, American Aniline's metropolitan sales manager, will be in charge of the Paterson operation. Karl C Ruppenthal will be in charge of commercial development and H P Baumann in charge of laboratories.

American Aniline will carry a complete line of dyestuffs in the Paterson warehouse. Principal offices of the company will continue to be maintained in New York and at Lock Haven, Pa, where American Aniline's plant is located.



Architects' conception of the new offices, laboratories and warehouse of American Aniline Products, Inc to be built at Paterson, NJ.

Borden's Acquires Pioneer Latex

Domestic and foreign holdings of Pioneer Latex and Chemical Company have been acquired by the Borden Company's Chemical Division. The Middlesex, NJ, firm—manufacturer of protective coatings and other products for the textile, flooring and adhesives industries—will be merged with Borden's Resinous-Reslac Department.

The announcement climaxed negotiations begun last year. An undisclosed amount of Borden stock was exchanged for Pioneer's assets—a plant in Middlesex and an interest in Placco Puerto Rico and Placco Colombiana Ltda.

Augustine R Marusi, a vice president of the Borden Company and president of its Chemical Division, said the merged units will be known as Resinous-Reslac-Pioneer.

"Products of the two are complementary," he said, "and this new move enables us to offer a more diversified line. It gives us a resinous-reslac plant in the New York area and this, with our contemplated expansion in the South and West, will round out geographical coverage; hence, better service to customers."

Mr Marusi said the Pioneer purchase is part of a five-year plan of general expansion for Borden Chemical. An "appreciable sum" has been set aside to enlarge production facilities at the Middlesex plant, he added.

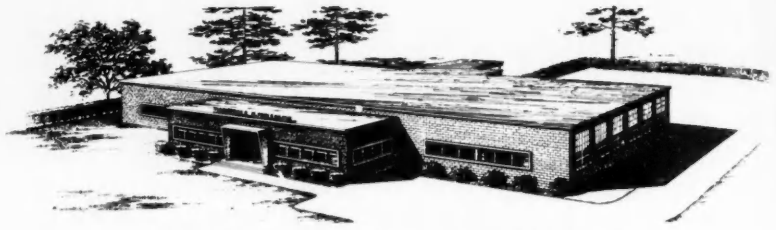
Borden Chemical now has 18 plants in the United States and an interest in 10 foreign operations.

Stephen G Paliska, president of Pioneer since its inception, will become assistant general manager of the Resinous-Reslac-Pioneer Department. Ashworth N Stull of Borden's Peabody, Mass, plant, will continue as general manager. No personnel changes are contemplated.

From a relatively small beginning in 1945, Pioneer has grown steadily and now lists more than 150 products. It is concerned primarily with the manufacture of asphalt solutions and emulsions, latex compounds, natural and synthetic rubber compositions. Physical properties at Middlesex include 20 acres of land and several one and two-story buildings.

Marshall & Williams Plans New Plant at Greenville

Construction of a new Marshall & Williams plant within three miles of the civic center of Greenville, SC, is well under way, according to company spokesmen. The new building will house the Marshall & Williams Southern Corporation and the Marshall & Williams Equipment Company—including sales and service headquarters, manufacturing facilities, and repair departments for all types of tenter frame equipment, which are presently located at 121 Wellborn Street, Greenville.



Artist's drawing of M&W's new plant at Greenville

With floor space of approximately 15,000 square feet, the new M & W building will be erected on a three-acre plot on South Carolina Bypass 291, South Pleasantburg Drive, between the Augusta and Laurens Roads adjacent to the Greenville city line. Of single-story brick construction, it will provide ample manufacturing, sales and office space for all present requirements as well as room for expected expansion. M & W plans provide for greatly improved loading and unloading, together with extensive parking area, to speed servicing.

The new headquarters will be under management of Fred H Land, vice president and general manager of M & W Southern Corporation, assisted by E E Ford and by William Brown.

PTI Receives Ford Foundation Grant

Philadelphia Textile Institute is the recipient of a grant of $70,000 from the Ford Foundation.

The conditions accompanying the grant specify that, for a ten-year period, only the interest on this money can be used, and said interest is restricted to the improvement of faculty salaries. At the end of ten years, the principle then becomes unrestricted.

The Philadelphia Textile Institute became eligible for Ford Foundation grants in November of 1955, when it was accepted as a member of, and accredited by the Middle States Association of Colleges and Secondary Schools.

It is anticipated that a similar grant for the same purposes will be awarded to the Institute again in 1957.

* * *

Everett L Kent, Kent Manufacturing Co, Philadelphia Textile Institute Foundation president, was elected by the Campaign Committee to head the 1956-57 drive for funds for the Foundation at a meeting of the committee on Tuesday, August 21st, at the Institute.

Those present included: Bertrand W Hayward, PTI president; W Lyle Holmes, Jr, Archibald Holmes and Sons, chairman of the board, PTI; Edward Rakestraw, Hyde-Rakestraw Company; Ralph Whitaker, Fred Whitaker & Sons; Lindsey A Mason, Philadelphia Dye Works; DeHaven Butterworth, H W Butterworth & Sons and Alan M Richter, director of public relations, PTI.

Other members of the committee not present include: Richard S Cox, dean emeritus of PTI; Rinaldo A Lukens, Continental Mills, Inc; Russell C Osborne, R C Osborne & Co; Leon P Brick, Onyx Oil & Chemical Co; and Ingram Bergman, Bergman Knitting Mills.

The committee resolved that the theme of general development should be carried through the campaign with contributors able to specify the purpose they favor. The following purposes were enumerated:

1) Unrestricted Funds—to be used where deemed most effective.
2) Contributions to add to the $70,000 grant by the Ford Foundation to increase faculty salaries.
3) Cost of Education Scholarship for $5,000. covering four year course of study. Designed as an aid to increase enrollment.
4) Direct contribution to insure a balanced budget.
5) Funds to cover cost of needed equipment for the college.

The committee set as a goal $150,000 to be raised in this drive and an equal amount to be raised for each of the next 5 years.

The funds to cover the cost of erecting an auditorium-gymnasium are to be solicited by a special gifts committee, as yet unnamed, because of the size of the amount needed. It is the desire of the committee to interest one of the larger textile firms in making a substantial contribution to the Auditorium-Gymnasium Fund, on a "match this amount" basis if necessary.

It was the feeling of the committee

that the general development theme would have greater appeal to the Industry and Mr Kent urged that textile and allied firms cooperate by including PTI in their contributions budget so that the college can continue to be of the best possible service to the industry.

International Fastness Label *Felisol**

The International Association for the Fastness Label *Felisol* was founded in Zürich on 15th March 1956. Its object is to promote interest in textiles of high fastness to light, washing, and weathering, and permission to use the trade-mark *Felisol* will be granted to firms applying certain recommended dyes, in a prescribed manner, to cotton, regenerated cellulose, linen, hemp, and ramie. The Association is equally representative of Continental dyemakers (BASF, FBy, CFM, FH. Fran, ACNA, Ciba, Gy, S, DH, and Rohner) and Continental dye users (Association Internationale de la Teinture Textile, Associazione Cotoniera Italiana, Vereeniging van Loonveredelingsbedrijven voor de Textielindustrie, and Verband der Schweizeriscehn Textilveredlungsindustrie). Discussions are in progress with British and American dyemaking firms.

The Felisol label is to be employed first in Holland, Italy, and Switzerland. The headquarters of the Association are in Zürich. The president is Francis Brichet (Basle), and H B Nowak (Frankfurt-am-Main) and G Artom (Milan) are vice-presidents.

*This item appeared in the July, 1956 issue of *J Soc Dyers Col.*

Gordon Research Conferences Anniversary Dinner

A commemorative dinner to mark the silver anniversary of the founding of the Gordon Research Conferences will be held at the Hotel Commodore, New York, on December 27th. The date of the dinner has been selected to coincide with the annual meeting of the American Association for the Advancement of Science, which is scheduled for that same week in New York.

The principal speaker at the dinner will be Nobel prizewinner Glenn T Seaborg. His topic will be "The Future Through Science".

Reservations at $10 per person, may be made by writing to W George Parks, director, Gordon Research Conferences, Univ of Rhode Island, Kingston, RI.

Kennedy

Edelstein

Emmerich

Mark

Merz

LTI to Confer Six Honorary D Sc Degrees

Lowell Technological Institute will confer six honorary doctor of science degrees at a special convocation, September 27, in observance of the Perkin Centennial.

Recipients will be: John F Kennedy, U S Senator from Massachusetts; Sidney M Edelstein, president, Dexter Chemical Corp; Fred J Emmerich, president, Allied Chemical & Dye Corp; H F Mark, director, Polymer Research Institute, Polytechnic Institute of Brooklyn; August Merz, American Cyanamid Co; and David F Connors, managing editor, *The Lowell Sun.*

Lowell Tech is participating in the international observance in September of the 100th anniversary of the discovery of the first synthetic dye—mauve, by the late Sir William Henry Perkin in London. Sir William visited this campus 50 years ago as a guest of Prof Louis A Olney, then head of Lowell Tech's course in textile chemistry and dyeing, and founder of the American Association of Textile Chemists and Colorists, which maintains its national headquarters and research laboratories at the Institute.

As part of the observance, one of the newest campus buildings will be dedicated to Prof Olney. It is expected that Christian Herter, Governor of the Commonwealth, will participate in the dedication.

The men chosen to receive honorary degrees are distinguished for their contributions over a long period in the fields of science, industry, and public service.

American Finishing Named Licensee for Milium and Avisco

The American Finishing Company, Memphis, Tenn, has become a finishing licensee for both Milium and Avisco.

Under the Milium division of Deering-Milliken license, American Finishing will specialize in finishing cottons and cotton blends, nylon and asbestos cloths with the Milium process (which makes fabrics heat reflective and is widely used in the apparel industry and in industrial applications).

With the American Viscose Company license, American Finishing will finish rayon and acetate under the Avisco Integrity Plan of Quality Control, and all fabric finishes will meet the requirements of the ASA Standard L-22.

CCNY Offering Two New Textile Courses

Two special courses for business men and women in textiles and allied industries will be offered for the first time this fall by City College of New York's Baruch School of Business.

The wool industry and its products are studied in the course Wool and Wool Blend Fabrics (Materials 667). Classes in the 14-week course will meet on Tuesdays from 6:50 to 8:30 PM, beginning September 24.

For students interested in the knit goods industry Mill Knit Goods (Materials 668) will be offered. Classes will be held on Thursday evenings from 6:50 to 8:30 PM. Mail registration is permitted for both courses, Further information and applications for enrollment by mail may be obtained by contacting the Evening Session Office, City College Baruch School, ORegon 3-7700.

Other fall term offerings in materials of commerce will include courses in elementary and advanced textiles: Textile Converting, Rayons and Synthetic Fibers, Basic Textile Design and Weaves, and Textile Testing and Fabric Analysis.

Registration for all classes will be Sept 18-19 at the Baruch School, Lexington Avenue and 23rd Street.

Cyanamid to Produce Creslan in Florida

American Cyanamid Co has announced a definite decision to construct a plant near Pensacola, Fla, for production of Creslan, a new acrylic textile fiber.

K C Towe, president of Cyanamid, announced simultaneously in New York the formation of a new Division, the Fibers Division, which will have responsibility for the selection and direction of the organization required in the production and marketing of the Company's new fiber. Alden R Loosli has been appointed general manager of the new Division.

The Company's final decision is to locate the new plant in Santa Rosa County on the eastern bank of Escambia Bay.

According to Mr Loosli, the Engineering and Construction Division of Cyanamid is to design and supervise the construction of the plant which, when completed, will employ about 350 people, including some 55 chemical engineers and technicians. It is expected that most of the plant personnel will be drawn from the local area.

Annual production is expected to be 27 million pounds of staple and tow, Mr Loosli said, with a 100 percent expansion potential embodied in the original plant design.

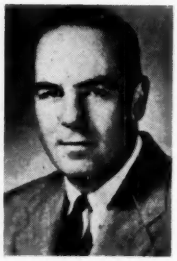
Although more than twenty essential factors were considered in choosing the plant site, he declared, two of the most important—excellent quality of water needed to process Creslan, and proximity to the source of raw materials—gave the Florida location top rating.

Mr Loosli has been with Cyanamid since 1937. Immediately prior to his new appointment he was assistant general manager of the Company's Industrial Chemicals Division.

Other appointments in the Fibers Division, to date, include: W L Lyall, sales manager; C W Bendigo, technical director; and N H Marsh, who will be manager of the Florida plant.

Prior to joining the company on July 1 this year, Lyall was executive vice president of Bates Fabrics, Inc. Mr Bendigo has been with Cyanamid since 1951 heading its Fibers Marketing Development Group.

Mr Marsh has been with Cyanamid since 1945. Among other assignments he directed the operation of the Company's acrylic fiber plant at its Stamford, Connecticut, Laboratories and for some time served as Technical Director at the Company's Fortier plant in Louisiana, which will be the chief source of supply of acrylonitrile for the Florida fiber operation.



Loosli

Lyall

Bendigo

Marsh

In recent years Mr Marsh has been a key figure in the Cyanamid team that has brought nearly a decade of research and pilot-plant development work on Creslan to the present point of fruition. The decision to manufacture Creslan commercially was announced in mid-June by Mr Towe.

Mr Loosli stated that ground-breaking ceremonies for construction of the plant are expected to take place during December and that completion is expected around the middle of 1958. During the construction period, he said, limited quantities of the fiber will be marketed from production at Cyanamid's pilot plant in Stamford, Conn.

Creslan applications, based on extensive wear and end-use tests already completed, will include jersey fabrics, sweaters, sportswear, blankets, fleeces, simulated fur fabrics, dresses, men's and women's suitings and overcoatings, children's wear, and certain industrial and non-woven fabrics.

Modern textile processing machinery will be installed at the new plant for use as an integral part of the quality control system for Creslan fiber production as well as for continuing evaluation of basic processing of various blends of Creslan with other man-made and natural fibers.

The new Fibers Division manager said that sales and technical service headquarters for Creslan will be set up in New York.

Expansion Planned in Wool Research

The wool industry will sharply increase its research program in the United States, according to an announcement made last month by The Wool Bureau Inc.

Studies on the basic properties of the wool fiber and their influence on mill processing efficiency and fabric performance will be broadened as part of a new two-year program at the Textile Research Institute in Princeton, N J, the Bureau said.

At the same time, a new research program on the performance properties of lightweight wool fabrics will be launched at Fabric Research Laboratories, Inc, Dedham, Mass, it was reported. Details of the project will be released within a few weeks, according to Max F Schmitt, Bureau president.

Campbell Returns from Turkey

Turkey is looking to the United States for technical know-how in building up its industrial and business enterprises, according to Malcolm E Campbell, dean of the School of Textiles at North Carolina State College.

Dean Campbell recently returned from a month-long visit in Turkey, where he served as a special adviser to the Turkish government and private industry, planning a textile college, probably to be located in Izmir, textile center of the Aegean Region. On July 30, President Bayar received Dean Campbell for a two-hour private conference at his summer home at Florya, on the Sea of Marmara.

Dean Campbell's Turkish assignment was an outgrowth of President Bayar's visit to the United States in 1954, when he requested an opportunity to see North Carolina State College's School of Textiles. Turkey, with a textile industry less than one-tenth the size of North Carolina's, has previously relied on European and US textile colleges for trained men in its industry.

President Bayar told Dean Campbell that it is his hope that the Turkish textile industry may eventually be expanded to supply the fabric needs of its estimated 21 million people. It will be many years, he said, before Turkey can hope to export fabric to the surrounding countries.

Turkey has the raw materials, including cotton transplanted from the US more than 25 years ago, the President said, to supply its own people with clothing, but lacks the technical know-how to operate its mills efficiently.

Dean Campbell is now preparing final recommendations on his survey of Turkey's textile industry to submit to the Turkish government.

• NEW PRODUCTS AND DEVELOPMENTS •

Eastman Polyester Dyes

A new line of dyes for polyester fibers, including several new prototypes, is being introduced by Eastman Chemical Products, Inc, subsidiary of Eastman Kodak Company, Kingsport, Tenn.

The new series includes eight colors plus black. Four more colors are in process of development and are expected to be announced in the near future. According to Eastman's evaluations made in the laboratory and in commercial tests, the new dyes provide the best over-all fastness properties of any currently available line of dyes for polyester fibers.

When the polyester fibers were first introduced, the textile industry had to rely principally on dyes originally developed for use on acetate fabrics. While these dyes were moderately successful, many of them have not been entirely satisfactory from a fastness standpoint.

Dyeing procedures recommended for handling the new dyes are those already in general use. Carriers or dyeing assistants are required except for high temperature dyeing (250°F) carried out under pressure. A number of suitable carriers are recommended including trichlorobenzene, orthodichlorobenzene, monochlorobenzene, tetrahydronaphthalene, biphenyl and phenyl phenols.

Dyeings can be readily accomplished in tow, tops, stock or fabric forms, it is claimed. Fabrics of 100% polyester filament fiber can be conveniently dyed in jigs. Fabrics of spun polyester yarns alone or blended with cotton, viscose, or wool can be readily handled in dye becks.

Premetalized wool dyes are said to have been found highly satisfactory in combination with the Eastman polyester dyes in dyeing polyester fiber-wool blends. Virtually all types of viscose dyes are suitable for blends containing viscose or cotton.

Characteristics of the individual dyes as reported by Eastman are as follows:

Eastman Polyester Yellow W produces a bright, greenish yellow with excellent fastness to light, washing, drycleaning, and sublimation.

Eastman Polyester Yellow 5R is a good low-cost yellow with excellent tinctorial value for dark brown and green shades. Its fastness to light, washing, drycleaning, and solvent spotting is excellent. On very heavy shades a slight sublimation may be noted.

Eastman Polyester Red B has excellent fastness to sublimation, light, washing, wet pressing, and drycleaning.

Eastman Polyester Red 2G is a bright, yellowish red with excellent fastness to light, washing, drycleaning, and sublimation.

Eastman Polyester Blue GR has excellent fastness to light, washing, sublimation, drycleaning, and wet pressing. Its low affinity for wool makes this dye particularly useful for coloring the polyester content of wool-polyester blends.

Eastman Polyester Blue GLF possesses excellent fastness to light, washing, drycleaning, sublimation, and wet pressing, particularly in the light shades. A low affinity for viscose and cotton makes this dye particularly valuable for use in dyeing blends of viscose or cotton and polyester fibers.

Eastman Polyester Blue 3RL is a bright red shade of blue with excellent fastness to sublimation, washing, light, drycleaning, and wet pressing. It does not have an extreme red flare under artificial light. It is an excellent low-cost blue component for dark shades such as navies, blacks, dark browns.

Eastman Polyester Navy G is used to obtain economical navies, blacks, and other dark shades. It has excellent fastness to sublimation, drycleaning, light, washing, and wet pressing.

Eastman Polyester Black RB is a diazo type of black which gives, on development, full shades of black fast to light and washing.

Wicatex Duller 3192; Wicatex Duller 3140

Wica Chemicals, Inc, has made two new additions to its line of specialty textile chemicals, Wicatex Duller 3192 and Wicatex Duller 3140.

Wicatex Duller 3192 is a 50 percent cationic colloidal dispersion of titanium. Its even exhaustion, high degree of light reflectance and softness of handle are especially attractive to wet processors of synthetic fabrics, it is claimed. Ease of dispersion in warm water, marked decrease of surface sheen, and durability of effect are also claimed for this product.

Wicatex Duller 3140 is a 25 percent anionic compound equally effective in light reflectance value. It is said to be an economical assistant generally employed in accepted finishing mixes.

Zefran

Plans for commercial production of a new synthetic textile fiber were announced last month by The Dow Chemical Company. The staple fiber, developed by Dow research men, will be marketed under the trade name Zefran (rhymes with "Jeff Ran").

Dow directors have approved immediate construction of a plant to make Zefran near Lee Hall, Va, on the James River.

Leland I Doan, Dow president, said Zefran combines in one fiber a wide range of the better properties of other fibers both man-made and natual.

"For example," he said, "it combines the ease of care properties of synthetic fibers with the exceptionally versatile dyeing characteristics of cellulosic fibers such as cotton or rayon.

"Added to these characteristics are good initial whiteness, good bleachability, wear resistance and resistance to rot and chemicals, freedom from serious pilling tendencies, and excellent dimensional stability when exposed to elevated temperatures."

This combination of properties suggests that Zefran will be of interest to manufacturers of most classes of textile goods including work clothes, play clothes, suitings and other apparel fabrics, draperies, upholstery fabrics and heavy industrial fabrics.

"We are confident that Zefran will find a ready market, particularly in the apparel and household fabric fields," Dr Doan said. "We think we have something new and useful to contribute.

"However, we are moving on a relatively conservative scale, at least at first, into what is for us a very new field."

More than five years of research, evaluation, and pilot-plant operations at Dow's Pittsburg, Calif, plant and Midland, Mich, headquarters preceded the announcement.

Dr Doan said Zefran will be available in forms (staple length, denier, crimp, etc) suitable for economical and efficient processing by the common textile processing systems and for blending with other fibers.

Completion of the Virginia plant, on a 600-acre site, is expected in about 18 months. Meanwhile, several textile mills are using the pilot-plant production of Zefran on a developmental basis.

New Source of Naphthol AS-LG

Fast color users will be interested to learn of a new domestic source of Naphthol AS-LG.

Announcement of this latest addition to its line of fast color specialties has been made by Blackman-Uhler Co, Spartanburg, SC, and Alliance Color & Chemical Co, Newark, NJ, divisions of The Andoxer Company.

Naphthol AS-LG, a substantive naphthol, produces shades from bright yellow to cordovan on cotton and rayon.

Yarns in beam, package and warp form, dyed with Naphthol AS-LG couplings, are said to be highly recommended for ginghams, checks, chambrays and knitted goods.

Evaluation and performance tests with the new Naphthol AS-LG are said to prove it to be visibly clean and bright, pure in quality, uniform and dependable. Couplings are fast to chlorine and peroxide.

The manufacturer will furnish samples and specific formulations.

A Highly Alkaline pH Standard

To increase the accuracy of pH measurements in the highly alkaline range, the National Bureau of Standards is recommending a sixth pH standard[1] for use along with the five pH standards previously established. Consisting of a saturated solution of calcium hydroxide, the new standard will provide an additional fixed point in the standard pH scale which the Bureau maintains.

This scale was set up[2] in 1948 to meet the need for a single standard pH scale as a basis for accurate measurement of acidity and basicity in aqueous solutions. In the manufacture of many commercial products —for example, textiles, dyes, paper, and ceramics—the rapidity and efficiency of the processes depend upon the accuracy with which pH can be determined.

The NBS standard pH scale is defined in terms of several fixed points in much the same manner as is the International Temperature Scale. The primary standards of the pH scale are solutions whose pH values are only slightly affected by dilution or by accidental contamination with traces of acid or alkali from the walls of the container or from the atmosphere. The substances from which the standard solutions are prepared are, in turn, stable materials which may be obtained as certified standard samples from the Bureau. The five standards thus far established cover the pH range from 1.68 to 9.18 at 25°C. However, the need for a highly alkaline standard has been felt for several years.

The new pH standard is a solution of calcium hydroxide saturated at 25°C. This reference solution is very easily prepared. No weighings are necessary, as a solution of reproducible composition can be made merely by shaking finely granular calcium hydroxide with water. The calcium hydroxide is prepared by igniting calcium carbonate conforming to American Chemical Society specifications for the reagent grade low in alkalies. The solid material must not be contaminated with soluble alkalies, but the presence of carbonate is of no concern, since calcium carbonate will precipitate from the solution at the time of preparation. The filtered solution of calcium hydroxide supersaturates readily and can normally be used over a wide range of temperatures without separation of the solid phase.

The pH of this solution is 12.45 at 25°C and is a rather sensitive function of temperature. Values of pH on the NBS conventional activity pH scale have been assigned at intervals of 5 degrees from 0° to 60°C. Although standard samples of calcium hydroxide are not yet available from the Bureau, highly pure preparations can be readily made from commercially available grades of calcium carbonate.

[1] For further details, see "Calcium hydroxide as a highly alkaline pH standard," by R G Bates, V E Bower, and E R Smith, *J Research NBS* **56**, 305 (1956) RP 2680.

[2] "Standardization of the pH scale," *NBS Tech News Bull* **31**, 138 (1947).

Antifoam B

A new silicone deformer, Antifoam B, has been developed by the Dow Corning Corporation. Useful in a wide variety of applications, it is said to be generally effective at concentrations in the range of 3 to 30 parts per million.

Claimed to be instantly dispersible in aqueous systems, Antifoam B may be added "as is" without stirring or agitation. Because it has extremely small particle size, it also is said to stay in suspension longer. It is reported to be ideal for continuous processing, as it will not oil out, plate out, settle or precipitate in most applications.

Antifoam B is said to retain its effectiveness even after being literally frozen or boiled, ie, it is effective during thermal sterilization.

Antifoam B is reported to have been thoroughly tested in laboratory and field use, and is now available for immediate shipment in commercial quantities.

Calcofluor White 4BT Effective on Acrilan

American Cyanamid Co has announced that Calcofluor White 4BT, one of its fluorescent dyes for textiles, is most effective as a whitening agent for Acrilan. Calcofluor 4BT previously has been used almost exclusively on cellulosic fibers.

It is claimed that Calcofluor White 4BT does not require an extra application step after bleaching, and it has superior light fastness to most of the optical bleaches recommended for use on this fiber. Cyanamid points cut, however, that light fastness of any optical bleach will only be as good as that of the bleached fiber itself.

Calcofluor White 4BT may be applied to Acrilan during the bleaching operation by adding it either to the sulfuric acid pretreatment or to the Textone bleach bath. Either of these methods is said to give good results. Acrilan that has already been bl ached with Textone reportably becomes whiter and brighter when further treated with Calcofluor White 4BT.

Further details on application may be received from the company's Dyes Department at Bound Brook, NJ.

Parex Singeing Machinery

Efficient, continuous cloth singeing at high operating speeds is said to be offered with the new Parex range of singeing machinery. The range is described as "extremely comprehensive" and includes a large number of individual components extending from a simple poteye to a surface combustion machine. A high degree of operational flexibility is said to be obtainable by the selection of items for a complete singeing system to suit local conditions.

The Parex Surface Combustion Singeing Machine itself forms the heart of the complete unit. It reportably achieves a high degree of efficiency from a unique method of forming the cloth into pockets inside which controlled combustion of hairs, whiskers and lint takes place. Alternative versions of the machine are available using either gas or gasoline vapor as fuel.

Full details of this machine and all other components of the Parex System are contained in a new publication available from the manufacturers, Messrs Ernest Turner & Co (Salford) Ltd, 3 West Burton Street, Salford 5, Lance, England.

• NAMES IN THE NEWS •

Goldthwait

Graham

Bond

Williams

Boggs

Deakyne

Charles F Goldthwait, originator of the semi-elastic cotton gauze bandage and the differential dye test for maturity and processing quality of cotton, retired from the Federal service on July 31, after nearly 50 years in textile research. For the past 15 years Mr Goldthwait has been engaged in cotton utilization research for the Southern Utilization Research Branch of the Agricultural Research Service, in New Orleans, La, and during that time has been responsible for a number of developments in this field.

Although retiring from Government service, Mr Goldthwait expects to continue his work in textile research, having accepted a position as visiting professor of textile chemistry with the Department of Textile Research, School of Textiles, North Carolina State College of Agriculture and Engineering, Raleigh, NC.

Mr Goldthwait joined the staff of the Southern Regional Research Laboratory in New Orleans in 1941, shortly after its establishment as the principal US Department of Agriculture center for research on cotton utilization. One of the pioneers in research on the chemical modification of cotton to increase its usefulness for special purposes, most of his efforts while working with USDA have been in this field. The new type bandage, developed during this time, has been adopted by the Defense Department, and is now being manufactured by several commercial firms, and marketed by one or two of the leading manufacturers of such articles for the retail trade.

Burton W Graham, formerly with the Davison Chemical Division of W R Grace & Co, has been appointed sales director of the Chemical Division of Armour and Company. He fills a position held by J M Hoerner, division general manager.

Boyce C Bond, a charter member of AATCC and former chairman of the Philadelphia Section, has joined the United States Dyestuff Corp, 76 Batterymarch St, Boston 10, Mass, as executive vice president. **Newton H Sobin** is president of the concern. Mr Bond will have direct supervision of the entire south and southwestern territory with headquarters at 517 N Holden Road, Greensboro, NC. Mr Bond was formerly with General Dyestuff for about 20 years in the Philadelphia territory and until recently with Pittsburgh Coke and Chemical Co as sales supervisor, Fine Chemicals Division. He is also inventor of the Bond dyeing and scouring machine and has wide experience in various fields of the dyestuff industry.

S H Williams, vice president of General Aniline & Film Corp, has been promoted from his present position of general sales manager to assistant general manager, Dyestuff and Chemical Division.

Mr Williams has been with General Aniline for 28 years, joining the company as a technical salesman. He rose to the position of manager of the Company's Charlotte, NC, branch in 1941 and in May 1952 was advanced to the position of general sales manager of the Dyestuff and Chemical Division. He was elected vice president in 1954.

Rene Bouvet, head of the textile development division of the Textile Research Department at American Viscose Corporation, has been named an assistant director of the department. He succeeds **Harrison D House,** who has retired. **George G Wells, Jr,** sales development representative at the corporation's Roanoke, Va, rayon plant, has been transferred to department headquarters at the Marcus Hook location. Replacing him at Roanoke is **George A Glarner,** from the Textile Research weaving division.

Heyden Chemical Corp has named **Richard H Boggs** export sales manager of the corporation and its Western Hemisphere subsidiary, Heyden Export Corp. **Walter C Deakyne, Jr** has been appointed assistant general sales manager, reporting to **F A Degener,** general sales manager.

Mr Boggs has been assistant to the director of overseas operations of Nuodex Products Co, a division of Heyden, since he joined the organization in 1955. Mr Deakyne has been with Heyden since 1951, most recently as New York sales manager.

American Cyanamid Co has appointed **William Seaman** and **Theodore G Rochow** as research fellows, and **Fred C Schaefer, G W Anderson** and **R B Angier** as research associates in its Research Division.

Dr Seaman, an analytical chemist, has been a member of Cyanamid's Bound Brook Laboratories for more than 20 years. Dr Rochow, who joined Cyanamid in 1934, organized the Microscopy Group at the Company's Stamford Laboratories. Dr Shaefer, an organic chemist, joined the Company in 1943, and is currently doing exploratory work as a member of the Basic Research Dept, Stamford. Drs Anderson and Angier are members of Cyanamid's Pearl River Research Laboratories.

Philip Cunningham, Jr has joined the technical service department of the Glyco Products Co, Inc. He was formerly employed by the Waldrich Co as assistant to the production manager in textile finishing operations. His last position was with the Cravenette Co as Southern technical representative on special textile chemicals.

Mr Cunningham will service industrial plants in southern Virginia, North and South Carolina, Georgia, Alabama, Mississippi and Tennessee.

Vassileff

Britton

Shippee

McCarron

Dillon

Sen

Harold A Sweet Jr has been appointed director of the Industrial Division, Refined Products Corp. Mr Sweet has spent 9 years in technical service and sales with the Antara Division, General Aniline & Film Corp. Previous experience includes several years in product development and production with the W B Chemical Co, Mt Vernon, and with the Chemical Dept of Bell Telephone Laboratories.

Neiko I Vassileff, president of Chemical Sales Corp, will represent RPC's Industrial Division in northern Ohio. Mr Vassileff, son of a leading Bulgarian industrialist, was formerly on the research team of B F Goodrich Chemical Co.

Edward J Britton has been appointed technical sales representative servicing the textile industry in New England for the Hilton-Davis Chemical Co, 3 Brayton Ave, Providence, RI.

Mr Britton will call on the trade throughout the area on all problems relating to the use of dyestuffs and pigments.

Mr Britton, prior to joining Hilton-Davis, was plant superintendent of Windsor Print Works.

James F Primm, formerly export sales manager of Amerotron Corporation, has joined Celanese Corporation of America as general export sales manager for its textile, chemical and plastics products. His headquarters will be at the Company offices in New York.

Gagliardi Research Corporation, East Greenwich, RI, has announced the addition of **Fred B Shippee** and **Dorothy A McCarron** to its staff to assist in conducting sponsored research and consulting for the textile, plastics, and chemical industries.

Prior to joining GRC, Mr Shippee was employed by Rohm & Haas Co, Philadelphia, in the Textile Chemicals Development Dept.

Miss McCarron was for the past five years with H Warshow & Sons, Inc, in Milton, Pa, where she established and subsequently supervised the testing laboratory for the dyeing and finishing plant.

During his current visit to the United States in conjunction with ISO meetings and the Perkin Centennial, **J P Niederhauser,** engineer of the Applications Laboratory of Villers Saint-Paul, of CFMC, will visit customers of Francolor Inc. He will be accompanied by **Jack H Firpo,** Francolor Inc's general manager in the United States.

Robert J Sturwol and **E B Cook, Jr** are recent additions to Emery's research staff. Mr Sturwold has joined the Organic Research Section under the supervision of **C G Goebel.** Mr Cook, formerly manager of Colonial Cleaners, Inc, Atlanta, is now associated with the Process Research Section under the direction of **V J Mucherheide** where he will conduct research on drycleaning processes for Emery's Sanitone Division.

B L Sen is currently undergoing higher technical training at the factory of M/S Durand & Huguenin SA, Basle, Switzerland, manufacturers of Indigosol dyestuffs. Mr Sen is associated with Indigosol distribution in the Indian market. After completing his present course he will return to Bombay.

National Starch Products, Inc, New York, NY, has announced the election of **James Dillon** as a member of the board of directors. Mr Dillon, a vice president of the company since 1954, is in charge of the company's synthetic resin division.

Obituary

A J BOYER

ARTHUR J BOYER, a Philadelphia sales representative since 1944 for E F Houghton & Co, Philadelphia, died suddenly at his home at 215 W Tulpehocken Street on Monday, August 20th, after an illness of several months. He was 67 years old.

A veteran of both World Wars, Mr Boyer held the rank of major in Army Ordnance. He was formerly a vice president in the investment firm of Lewis C Dick Co, Philadelphia. He was graduated from Brown Preparatory School and attended Franklin and Marshall College and the Philadelphia Textile Institute.

Mr Boyer was an active member of the American Society for Metals, The American Society of Lubrication Engineers, the Germantown Cricket Club and a past commander of the Ocean City Yacht Club.

He is survived by his wife, Pauline M; two daughters, Mrs George K Reynolds, Jr, of Lancaster, Pa, and Mrs Ernest E Hedler, Jr, of Hudson, O; a sister, Mrs Walter Torpey of Philadelphia, and three grandsons.

General Calendar

AMERICAN ASSOCIATION FOR TEXTILE TECHNOLOGY, INC
Oct 3, Nov 7, Dec 5 (All meetings at the Vanderbilt Hotel, New York, N Y).

AMERICAN OIL CHEMISTS SOCIETY
Spring, 1957 (Spring meeting, New Orleans); Sept 30-Oct 2, 1957 (Fall meeting, Cincinnati); Apr 21-23, 1958 (Memphis); Oct 20-22, 1958 (Chicago); Spring, 1959 (New Orleans); Fall, 1959 (Los Angeles).

AMERICAN SOCIETY FOR TESTING MATERIALS
Sept 16-22—2nd Pacific Area National Meeting and Apparatus Exhibit, Hotel Statler, Los Angeles, Calif; Oct 16-19—Fall Meeting of Committee D-13 on Textiles, Warwick Hotel, New York, N Y.

THE FIBER SOCIETY
Spring Meeting—May 1-2, 1957, The Clemson House, Clemson S C

THE INSTRUMENT SOCIETY OF AMERICA
11th Annual Instrumentation-Automation Conference and Exhibit—Sept 17-21, New York Coliseum, New York, N Y

LOWELL TECHNOLOGICAL INSTITUTE
Sept 26-28 (Perkin Centennial observance and open house).

NATIONAL COTTON COUNCIL OF AMERICA
October 3-4 (Chemical Finishing Conference, Hotel Statler, Washington, DC); Feb 28-Mar 1 (Cotton Research Clinic, General Oglethorpe Hotel, Savannah, Ga).

PERKIN CENTENNIAL
September 10-15. Waldorf-Astoria Hotel, New York, N Y.

THE QUARTERMASTER ASSOCIATION
Annual Convention — Oct 27-28, Conrad Hilton Hotel, Chicago, Ill.

SOUTHERN TEXTILE EXPOSITION
19th Exposition, Oct 1-5, Textile Hall, Greenville, S C.

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
Sept 11, Oct 9, Nov 7 (Palm Terrace Suite, Hotel Roosevelt, New York, N Y).

TEXTILE QUALITY CONTROL ASSOCIATION
September 27-28—Fall Meeting, Sedgefield Inn, Greensboro, NC

Ben

ndergoing
the fac-
enin SA,
turers of
n is as-
bution in
mpleting
return to

Inc, New
e election
er of the
n, a vice
nce 1954,
ay's syn-

lphia sales
for E F
suddenly at
Street on
ess of sev-

Mr Boyer
dnance. He
investment
hia. He was
School and
College and

ber of the
American
he German-
mmander of

ne M; two
lds, Jr, of
dler, Jr, of
Torpey of

ia Hotel,

, Conrad

SITION
ile Hall,

MICAL
IATION

Terrace
, N Y).

L

Sedgefield